

CENTER FOR
HEALTHCARE EDUCATION
AND STUDIES

**THE READINESS TRAINING PROGRAM
FOR NURSING PERSONNEL IN THE AMEDD**

Volume I

PROGRAM DEVELOPMENT

DISTRIBUTION STATEMENT A

Approved for public release;
Distribution Unlimited

**HR 95-003 A
September 1997**

19980617 036



UNITED STATES ARMY
MEDICAL DEPARTMENT CENTER AND SCHOOL
FORT SAM HOUSTON, TEXAS 78234-6000

NOTICE

**The findings in this report are
not to be construed as an official
Department of the Army position
unless so designated by other
authorized documents.**

* * * * *

**Regular users of services of the Defense Technical Information
Center (per DoD Instruction 5200.21) may purchase copies direct
from the following:**

**Defense Technical Information Center (DTIC)
ATTN: DTIC-OCP
8725 John J. Kingman Road
Suite 0944
Fort Belvoir, VA 22060-6218**

**Telephone: DSN 427-8031
(703) 767-8031**

**FAX: DSN 427-8032
(703) 767-8032**

All other requests for these reports will be directed to the following:

**U.S. Department of Commerce
National Technical Information Services (NTIS)
5285 Port Royal Road
Springfield, VA 22161**

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.				
1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE 30 September 1997		3. REPORT TYPE AND DATES COVERED Final Report of study conducted 1994 - 1995
4. TITLE AND SUBTITLE The Readiness Training Program for Nursing Personnel in the AMEDD Volume I: Program Development			5. FUNDING NUMBERS	
6. AUTHOR(S) Zadinsky, Julie K.				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Center for Healthcare Education and Studies 1608 Stanley Road Building 2268 Fort Sam Houston, Texas 78234-6125			8. PERFORMING ORGANIZATION REPORT NUMBER HR 95-003A	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) COL Susan C. McCall Assistant Chief, Army Nurse Corps Assistant to the Surgeon General for Nursing 5109 Leesburg Pike Room 669, Skyline Six Falls Church, VA 22041-3258			10. SPONSORING / MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES				
12a. DISTRIBUTION / AVAILABILITY STATEMENT Unclassified / Unlimited			12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) The primary purpose of the study was to evaluate a readiness training program for nursing personnel in the active and reserve components of the U. S. Army Medical Department (AMEDD). This formative evaluation, which used empirical data to assess program delivery in its early stages of development, was needed to provide information about how a proposed training program could be successfully implemented in the diverse training environments in the active and reserve components of the AMEDD (Rossi & Freeman, 1993; Wholey, Hatry, & Newcomer, 1994). This information provided insight into potential problems of program implementation and strategies for overcoming these problems. The training program that was a product of this evaluation is known as the <i>Readiness Training Program for Nursing Personnel in the AMEDD</i> . This training program was based on training needs identified in the study, <i>Readiness Competency of Nursing Personnel in the AMEDD</i> (Zadinsky, 1997). The <i>Readiness Training Program</i> provides units in the active and reserve components of the AMEDD with a method of selecting skills and functions for training; planning training based on an assessment of selected skills and functions; executing training using methods designed to train to standard; and assessing training based on a continuous evaluation of skills and functions. Critical training principles emphasized in this program include (a) making leaders responsible for training, (b) providing adequate training for trainers, (c) using appropriate publications for training, (d) using performance-oriented training, (e) training using realistic field conditions, (f) maintaining mission-essential equipment and supplies, (g) training to challenge, and (h) training to sustain proficiency.				
14. SUBJECT TERMS Medical Readiness, Readiness Competency, Readiness Training Program, Military Training			15. NUMBER OF PAGES 155	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT UNCLASSIFIED	18. SECURITY CLASSIFICATION OF THIS PAGE UNCLASSIFIED	19. SECURITY CLASSIFICATION OF ABSTRACT UNCLASSIFIED	20. LIMITATION OF ABSTRACT UNLIMITED	

TABLE OF CONTENTS

DISCLAIMER	i
REPORT DOCUMENTATION PAGE	ii
TABLE OF CONTENTS	iii
LIST OF TABLES	v
LIST OF APPENDIXES	vi
ABSTRACT	vii
ACKNOWLEDGMENTS	viii
INTRODUCTION	1
Background	1
Purpose	2
Research Objectives	3
Assumptions	4
Delimitations	4
Framework	5
Review of Literature	7
METHODS	10
Design	10
Study Sites and Sample	11
Selection of Study Sites	11
Selection of Participants	11
Data Collection Measures	12
Demographic Questionnaire	13
Competency Based Exercise	13
Written Exercise	15
Semi-Structured Interview	16
Study Procedures	17
Protection of Human Rights	17
Evaluator Training	18
Testing and Training Procedures	19
Data Analysis	22
Management of Data	22
Analysis of Research Objectives	23

RESULTS	26
Sample Characteristics	26
Research Objective One	28
Research Objective Two	45
Research Objective Three	62
DISCUSSION	69
CONCLUSIONS	72
RECOMMENDATIONS	74

LIST OF TABLES

TABLE		PAGE
1	Number and Percent of Participants From the Six Study Sites in Each Specialty Area and Grade Category	27
2	Mean Percent Scores (<u>M</u> (<u>SD</u>)) on the Pretest Competency Based Exercise for Nursing Personnel in Each Specialty Area for the Six Study Sites.	47
3	Mean Percent Scores (<u>M</u> (<u>SD</u>)) on the Pretest Written Exercise for Nursing Personnel in Each Specialty Area for the Six Study Sites	48
4	Summary Statistics of Percent Scores for Medical Surgical and Perioperative Skills on the Pretest Competency Based Exercise for Nursing Personnel at All Study Sites	49
5	Means, Standard Deviations, and Paired t Tests for Pretest and Posttest Percent Scores on the Competency Based Exercise for Nursing Personnel in Each Specialty Area for the Study Sites.	58
6	Means, Standard Deviations, and Paired t Tests for Pretest and Posttest Percent Scores on the Written Exercise for Nursing Personnel in Each Specialty Area for the Study Sites	60

LIST OF APPENDIXES

APPENDIX A. DEMOGRAPHIC QUESTIONNAIRE	A-1
APPENDIX B. LIST OF SKILLS SELECTED FOR TESTING	B-1
APPENDIX C. COMPETENCY BASED EXERCISE	C-1
APPENDIX D. DESCRIPTION OF SKILL STATIONS	D-1
APPENDIX E. WRITTEN EXERCISE	E-1
APPENDIX F. GLOSSARY	F-1
APPENDIX G. BIBLIOGRAPHY	G-1
APPENDIX H. DOCUMENT DISTRIBUTION LIST	H-1

ABSTRACT

The primary purpose of the study was to evaluate a readiness training program for nursing personnel in the active and reserve components of the U. S. Army Medical Department (AMEDD). This formative evaluation, which used empirical data to assess program delivery in its early stages of development, was needed to provide information about how the proposed training program could be successfully implemented in the diverse training environments in the active and reserve components of the AMEDD (Rossi & Freeman, 1993; Wholey, Hatry, & Newcomer, 1994). This information provided insight into potential problems of program implementation and strategies for overcoming these problems. The training program that was a product of this evaluation is known as the *Readiness Training Program for Nursing Personnel in the AMEDD*. This training program was based on training needs identified in the study, *Readiness Competency of Nursing Personnel in the AMEDD* (Zadinsky, 1997). The *Readiness Training Program* provides units in the active and reserve components of the AMEDD with a method of selecting skills and functions for training; planning training based on an assessment of selected skills and functions; executing training using methods designed to train to standard; and assessing training based on a continuous evaluation of skills and functions. Critical training principles emphasized in this program include (a) making leaders responsible for training, (b) providing adequate training for trainers, (c) using appropriate publications for training, (d) using performance-oriented training, (e) training using realistic field conditions, (f) maintaining mission-essential equipment and supplies, (g) training to challenge, and (h) training to sustain proficiency.

ACKNOWLEDGMENTS

Numerous nursing and other personnel in the active and reserve components of the AMEDD contributed to the successful completion of this study. To develop a training program that could be used by nursing personnel in the varied training environments within the AMEDD, it was critical (a) that a core group of nurses with expertise in field nursing provide expert guidance for the study and (b) that nursing personnel for whom the training program is being developed also provide their input to the study. Following is an attempt to recognize groups of individuals who made major contributions to the study, with mention of a few outstanding individual contributors.

While in the position of Chief Nurse, U.S. Army Forces Command, COL Susan McCall served as study director for this research project. She selected an expert panel of nurses with expertise in field nursing to help provide guidance for the study. Their names and positions at the time they came together as a group are as follows: COL Morgan, CN, 62nd Medical Group; COL Tiernan, CN, 1st Medical Group; COL Chudy, PROFIS CN, 131 Field Hospital; COL Schaeberle, CN, 44th Medical Brigade; COL Anderson, CN, 818th Medical Brigade, USAR; LTC Koehler, CN, 55th Medical Group; and LTC Hofman, Chief, Team S2/S3, Ireland Community Hospital. COL Bartz, Chief, Department of Nursing Science, AMEDDC&S, worked with this expert panel as an educational consultant for the development of the training program.

Many nursing personnel reviewed the content and format of drafts of the training program to ensure its usefulness for a wide variety of training environments in the AMEDD. These reviewers included Brigade, Group, and TOE Chief Nurses; AMEDDC&S staff officers and

instructors; and training and staff officers in the reserve components of the AMEDD.

Additionally, nursing personnel from various units in the active and reserve components of the AMEDD volunteered to serve as evaluators for the competency based exercise. These evaluators fulfilled their duties as data collectors in addition to their responsibilities in their own units. Numerous other nursing personnel with field experience in the active and reserve components of the AMEDD also provided valuable input to the study.

Personnel assigned to the Center for Healthcare Education and Studies (CHES) provided research support for this study in addition to their many other responsibilities. Of particular support throughout the study were Ms. Pat Twist, who provided graphic and administrative support, and Ms. Diane Willette, who served as the budget analyst. Others assigned to CHES and to other areas of the AMEDDC&S provided support for the study as their schedules allowed. For example, Dr. Barbara Wojcik provided statistical consultation and Ms. Janice Ware served as a management assistant for portions of the study. Also, Mr. James Zadinsky volunteered through the Red Cross to serve as a research assistant throughout the study.

Finally, this study could not have been completed without the nursing personnel who served as study participants and their unit leaders. They eagerly volunteered their time and energy to the study in spite of their busy schedules. Also, the directors and personnel at the Camp Bullis, Texas DEPMEDS training site, the Fort Indiantown Gap Regional Training Site-Medical, and the other data collection sites greatly enhanced the quality of the study by assisting with the use of their areas for the required testing and training sessions.

Julie K. Zadinsky
COL, AN
Principal Investigator

INTRODUCTION

Background

The U.S. Army Medical Department (AMEDD) is responsible for maintaining the medical, clinical and technical readiness of personnel to support the Army during military operations. In the past, it has been assumed that the everyday experience of working in a civilian or military healthcare role during peacetime prepares personnel to provide patient care in a deployed or field status. However, there is now a widening gap between nursing practice in high technology, automated fixed healthcare facilities and nursing practice in a field environment (Zadinsky, 1997).

Most nursing personnel in the active and reserve components of the AMEDD currently work in specialized clinical roles in a high technology healthcare environment during peacetime. They use state-of-the-art, automated equipment and rely on specialized support services, such as pharmacy and respiratory therapy, to provide patient care. These personnel do not have an opportunity in their everyday work environment to practice many of the skills and functions they must perform in a deployed or field status.

A study of the readiness of nursing personnel to provide patient care in a deployed or field status demonstrated that nursing personnel need additional training in skills and functions that they perform frequently or perform as life saving measures in a field environment, but that they do not routinely perform in fixed facilities in a peacetime environment (Zadinsky, 1997). Because of this demonstrated training need, the AMEDD Study Board tasked the Center for Healthcare Education and Studies, U.S. Army Medical Department Center & School

(AMEDDC&S), to develop a training program that would meet training needs identified in the study, *Readiness Competency of Nursing Personnel in the AMEDD* (Zadinsky, 1997).

Therefore, this second readiness study was conducted to evaluate a readiness training program for nursing personnel in the AMEDD. The training program was designed for all nursing personnel who are in the active and reserve components of the AMEDD and who function in the field as medical surgical nurses, operating room nurses, nurse anesthetists, medical specialists, practical nurses, and operating room specialists. Throughout the study, seven nurses with expertise in field nursing worked together as an expert panel under the guidance of the Chief Nurse, U.S. Army Forces Command to provide input as needed. Each of these nurses had served in multiple positions in a field environment, to include working in a deployed status in one or more assignments outside the continental United States, and four of these seven nurses served on the expert panel for the first readiness study previously mentioned. Additionally, the Chief, Department of Nursing Science, AMEDDC&S, worked with this expert panel as an educational consultant for the evaluation of the training program.

Purpose

The primary purpose of the study was to evaluate a readiness training program for nursing personnel in the active and reserve components of the AMEDD. This formative evaluation, which used empirical data to assess program delivery in its early stages of development, was needed to provide information about how the proposed training program could be successfully implemented in the diverse training environments in the active and reserve components of the AMEDD (Rossi & Freeman, 1993; Wholey, Hatry, & Newcomer, 1994). This information

provided insight into potential problems of program implementation and strategies for overcoming these problems.

The training program that was a product of this evaluation is known as the *Readiness Training Program for Nursing Personnel in the AMEDD*. This training program was based on training needs identified in the study, *Readiness Competency of Nursing Personnel in the AMEDD* (Zadinsky, 1997). The *Readiness Training Program* provides units in the active and reserve components of the AMEDD with a method of selecting skills and functions for training; planning training based on an assessment of selected skills and functions; executing training using methods designed to train to standard; and assessing training based on a continuous evaluation of skills and functions.

Research Objectives

The following are the research objectives, which together are designed to evaluate the main components of the *Readiness Training Program for Nursing Personnel in the AMEDD*:

1. Define the structure and function of a medical readiness training program for nursing personnel in the active and reserve components of the AMEDD. This training program will be known as the *Readiness Training Program for Nursing Personnel in the AMEDD*.
2. Describe the effectiveness of the *Readiness Training Program* when implemented in training environments commonly found in the active and reserve components of the AMEDD.
3. Identify training principles critical to the success of the *Readiness Training Program*.

Assumptions

The following are basic assumptions that were made about nursing personnel in the active and reserve components of the AMEDD:

1. Nursing personnel are competent in the basic skills and functions of their area of concentration (AOC) or military occupational specialty (MOS).
2. Nursing personnel have been exposed to Deployable Medical Systems (DEPMEDS).
3. There are basic differences in nursing practice between tables of distribution and allowances (TDA) and tables of organization and equipment (TOE) medical facilities.
4. There are unique functions which nursing personnel must perform in support of patient care or unit management in a field environment.
5. There are limited resources available for the medical readiness training of nursing personnel.

Delimitations

The study was limited in scope to evaluating a training program designed to improve the medical readiness of nursing personnel in the AMEDD. The study did not address the evaluation of a training program for the following: (a) common soldier tasks, (b) clinical skills specific to treatment of nuclear-biological-chemical casualties, (c) skills specific to the psychiatric nursing role of personnel assigned to a combat stress control team, (d) skills specific to the preventive medicine role of community health nurses in a field environment, and (e) patient documentation tasks. At the time of the study, there were no approved standardized patient documentation forms for use in the field environment.

Framework

The organizing framework of the study is based on the premise that institutional training, operational assignments, and self development activities, which are referred to in the Army as the three pillars of the leader development process, form the basis for medical readiness (STP 21-I-MQS, 1990; STP 21-II-MQS, 1991; STP 21-III-MQS, 1993). As used in this study, institutional training refers to the formal education and training that prepare nursing personnel to work in their AOC or MOS in entry level positions as well as positions of increasing responsibility. Operational assignments refer to duty assignments that offer nursing personnel the opportunity to use and build upon what they learn through their formal education and training. Self development activities refer to military and civilian continuing education, correspondence courses, and self study activities that allow nursing personnel to expand on their knowledge base.

Medical readiness is defined as the initial abilities of nursing personnel to perform their patient care role in a field environment (JCS Pub, 1989, 1-02). This includes their ability to deploy and employ without unacceptable delays. Note that as defined for the purposes of this study, medical readiness refers to individual readiness, as opposed to the readiness of a unit to perform collective tasks.

Medical readiness is measured in terms of readiness competency, which is defined as the ability of nursing personnel to perform skills and functions critical to their patient care role in a deployed or field status (Ellis, 1988). Readiness competency is measured on a continuum that ranges from knowing how to do something to knowing how to do it well. As used in this study, readiness competency does not include all professional aspects of patient care; instead,

readiness competency refers to critical components of individual medical readiness that are unique to patient care in a field environment but that can be trained during peacetime.

Nursing personnel who are confident in their abilities to perform the skills and functions of these critical components of their general field medical role will be better prepared to learn the full range of duties involved in the specific role to which they are assigned when placed in a deployed or field status.

The framework is also based on the premise that medical readiness of nursing personnel is also dependent on a readiness training program that focuses on clinical skills and functions that nursing personnel perform frequently or perform as life saving measures in a deployed or field status, but that they do not routinely perform in fixed facilities in a peacetime environment.

The framework identifies two critical components of a readiness training program: (a) clinical skills that nursing personnel perform frequently or perform as life saving measures in a field environment, but do not routinely perform in fixed healthcare facilities and (b) battle focused functions, which are actions performed by nursing personnel in support of patient care or unit management in a field environment. Soldier skills, which include non-medical tasks--such as setting up a temper tent--that are essential to the operation of a medical treatment facility in the field, are recognized as an essential component of medical readiness. However, it was beyond the scope of this study to evaluate a training program that included these skills.

Clinical skills, which are the first component of the readiness training program, can be divided into three categories of skills. The first category includes skills performed using field medical equipment, which usually are operated differently from equipment used to perform the same or similar skills in fixed facilities. The second category of skills includes those

performed in the field without automated equipment or special support services commonly available in fixed medical treatment facilities (MTFs). For example, various types of intravenous flow meters and infusion pumps are readily available in fixed MTFs, but they are not always available in a field environment. The third category of skills includes those performed by nursing personnel in aspects of their role that are expanded from the fixed facility to the field environment. For example, administering a blood transfusion is an expanded role skill for medical specialists and practical nurses because this skill generally is not within their scope of practice for their fixed facility roles, but it is a critical skill for their role in some situations in a field environment.

Battle focused functions, which are the second component of the readiness training program, include five categories of functions. Command and control, medical evacuation, and medical supply functions require nursing personnel to interface with these systems when providing patient care in a field environment. Infection control functions are actions performed to prevent and control infections associated with (a) battle injuries and (b) disease and nonbattle injuries (DNBI) in a field environment. Sustainment functions are actions performed in support of patients, oneself, or other staff to ensure ongoing patient care services in a field environment, to include patient care in aid stations, medical companies, dispensaries, clinics, and hospitals in all levels of care.

Review of Literature

The training program being evaluated in this study is designed to help units train nursing personnel in skills and functions that differ from the fixed facility to the field environment. This training program needs to facilitate long-term retention of critical skills and functions

trained. Current literature does not include either studies of the short-term effectiveness of readiness training in medical skills and functions or studies of the long-term retention of these medical tasks after training. Therefore, a brief review of retention studies of non-medical tasks commonly performed in the military is presented.

Retention studies of non-medical tasks commonly performed in the military indicate that there are several key factors related to task retention (Hagman & Rose, 1983). The strongest determinant of task retention over intervals of nonuse has consistently been identified as the level of original learning (Farr, 1987; Gardlin & Sitterley, 1972; Hurlock & Montague, 1982; Prophet, 1976; Schendel, Shields, & Katz, 1978). The improved retention of higher ability individuals has been related both to higher levels of original learning and to variations in learning strategies (Farr, 1987; Hall, Ford, Whitten, & Plyant, 1983). Furthermore, overlearning or overtraining--commonly defined as performing additional practice trials after achieving task proficiency--has been related to better task retention than training only to task proficiency, regardless of whether the additional trials are performed during initial or refresher training (Goldberg, Drillings, & Dressel, 1981; Schendel & Hagman, 1982). However, overtraining has a point of diminishing returns (Krueger, 1929; McGeoch & Irion, 1952).

The organizational complexity or degree of cohesiveness of a task consistently has been identified as a key task-specific determinant of long-term retention (Farr, 1987; Gardlin & Sitterley, 1972; Hurlock & Montague, 1982; Naylor & Briggs, 1961; Prophet, 1976; Schendel et al., 1978; Shields, Goldberg, & Dressel, 1979). Moreover, qualitative explanations and other instructions designed to increase the meaningfulness of procedural, complex rule-based, and principle-based tasks have been found to improve long-term retention (Gentner, 1980;

Kieras, 1981; Smith & Goodman, 1984; Sturges, Ellis, & Wulfeck, 1981; Tourangequ & Sternberg, 1982). Qualitative explanations may help learners construct mental models, which provide more concrete, understandable "knowledge-representation/retrieval structures" for the given skills and knowledge (Farr, 1987).

The independent effect of a retention interval, which refers to a period of time when acquired tasks or knowledge are not used, is that as the interval increases, decay tends to increase (Farr, 1987). Individuals may be able to reachieve their original level of learning with part task training or conceptual simulation (Hutchins, Hollan, & Norman, 1985; Stevens & Steinberg, 1981; Young, 1983). This hypothesis is supported by the theory that a network of knowledge-representation/retrieval structures can be restimulated with conceptually important cues provided in the same context as the original learning (Farr, 1987). For example, reminder materials or hands-on tests can provide effective refresher training for procedural skills (Hurlock & Montague, 1982).

In summary, studies have not been conducted to explore the short-term effectiveness or long-term retention of medical readiness training. However, studies of non-medical military tasks indicate that the level of original learning, task complexity, qualitative explanations, and length of the retention interval are key factors related to task retention. The findings of these studies of non-medical tasks will be used together with the findings of this study to evaluate a readiness training program that addresses training needs identified in the study, the *Readiness Competency of Nursing Personnel in the AMEDD* (Zadinsky, 1997).

METHODS

In the methods section, the study design is described, selection of the study sites and sample are discussed, data collection measures are described, and study procedures are explained. Study procedures include those procedures used for protection of human rights, evaluator training, and testing and training. Methods used to manage data and analyze the research objectives are briefly reviewed.

Design

A formative evaluation study design was used to provide evaluative information about the *Readiness Training Program* during its developmental stages. A formative evaluation can be considered as one focus or type of process evaluation, which uses empirical data to assess program delivery (Wholey et al., 1994). A major strength of a formative evaluation is that it enables informed decisions to be made during the developmental stages of a program to improve and strengthen the program before it is adopted by an organization (Rossi & Freeman, 1993; Wholey et al., 1994; Worthen & Sanders, 1987).

This formative evaluation included the use of expert judgments, semi-structured interviews, participant observations, and a pretest/posttest assessment of readiness skills and functions. Expert judgment was used to help define the structure and function of the *Readiness Training Program* through a content review of the program in its various stages of development. Information obtained through use of interviews, observations, and pretest/posttest assessments of the program at six study sites provided valuable information about program implementation. Finally, semi-structured interviews were used to obtain information about training principles critical to the success of the program.

Study Sites and Sample

Selection of Study Sites

Study sites were selected based on the need (a) to evaluate the effectiveness of the training program in a wide variety of training environments commonly found in the active and reserve components of the AMEDD and (b) to obtain a sample of nursing personnel who had experienced a wide variety of TDA and TOE assignments. The expert panel members helped identify units that could participate in the study during the period of time available for data collection. First, nursing personnel enrolled in one Officer Basic Course (OBC), one Officer Advanced Course (OAC), and one Practical Nurse Course (PNC) participated in the study at the end of their course. Because of the need to test the use of the training program in one TOE and one TDA unit in the active component of the AMEDD, one Combat Support Hospital (CSH) and one U.S. Army Medical Center (MEDCEN) were selected for participation in the study. Finally, one U.S. Army Reserve (USAR) unit scheduled for training at a Regional Training Site - Medical (RTS-MED) during the data collection period agreed to participate in the study.

Selection of Participants

All nursing personnel who were assigned to one of the units participating in the study and who would function in a deployed or field status as a medical surgical nurse (66H), operating room nurse (66E), nurse anesthetist (66F), practical nurse (91C), medical specialist (91B), or operating room specialist (91D) were eligible for inclusion in the study. The point of contact for the study at each data collection site selected the categories of personnel whom they could include in the training program. Nurse anesthetists were the only category of personnel not

selected for participation in the study. Convenience sampling was used because of the need to conduct a time intensive data collection procedure with nursing personnel who had other patient care, training, and school responsibilities. The number of nursing personnel who could be included in the convenience sample from units volunteering to participate in the study was judged to be adequate for data analysis.

Purposive sampling was used to invite selected study participants to participate in the semi-structured interviews during the time when the posttest was given. This type of sampling entails selecting participants according to the study needs (Morse, 1991). The first interview sampling criterion specified that the investigator would interview those who scored very good as well as those who scored very poorly on the competency based exercise so the entire range of personal experiences with the training program could be explored (Glaser, 1978; Morse, 1991). Second, participants were selected for an interview based on their ability to critically reflect and articulate their experiences with the training program. Third, as interviews progressed, participants were selected based on their clinical speciality area so that nursing personnel from all specialty areas could be interviewed. Adequacy of sample size for the semi-structured interviews was achieved when the investigator experienced redundancy among all categories of nursing personnel in their descriptions of experiences with the training program (Morse, 1991, 1994).

Data Collection Measures

A demographic questionnaire, competency based and written exercises, a semi-structured interview guide, and training records were used to collect data for the study. The development and use of these data collection measures are briefly described.

Demographic Questionnaire

The investigator revised the demographic questionnaire used in the study, *Readiness Competency of Nursing Personnel in the AMEDD*, to meet the needs of the present study (see Appendix A). The questionnaire was used to obtain general demographic data as well as information about participants' institutional training, operational assignments, and self development activities that may be related to their readiness competency. The same demographic questionnaire was administered to all study participants at the time of the pretest. Some items on the questionnaire were designed for specific categories of nursing personnel (see Appendix A).

Competency Based Exercise

The competency based exercise used in this study is a performance based evaluation of skills that are performed frequently or performed as life saving measures in the field environment, but that are not routinely performed in the same manner in fixed facilities. This exercise was originally developed for the study, *Readiness Competency of Nursing Personnel in the AMEDD* (Zadinsky, 1997). For each skill, the competency based exercise includes (a) test conditions; (b) time allowed for skill performance; (c) statements for the evaluator to read to each study participant; and (d) critical elements of skill performance.

In the original study, an expert panel of nurses selected skills to be included in the competency based exercise for each of seven categories of nursing personnel (see Appendix B). Methods of selecting these skills and evaluating the test item for each skill followed a systematic procedure used for developing and measuring an instrument's content validity (Lynn, 1986). Expert panel members used a content validity scale to rate each skill for

inclusion in the competency based exercise for each category of nursing personnel and later used the same scale to rate the test items for these skills (Zadinsky, 1997). Based on panel members' ratings, the competency based exercise for each category of nursing personnel had a content validity index of 1 (Lynn, 1986).

Before using the competency based exercise, the investigator made minor revisions to the exercise based on experience using it with 1,085 nursing personnel in the study for which it was developed (see Appendix C). In a few instances, evaluator statements were modified to improve the clarity of instructions given to study participants. In other cases, the wording of a critical element was changed to improve the precision with which a participant could be evaluated on a skill. No changes were made to the guidelines for administering the competency based exercise to study participants. The same equipment and supplies used for the original version of the exercise were also used in this study (see Appendix D).

Expert panel members who helped develop the competency based exercise agreed that all critical elements of each skill are equally important to skill performance and that all skills on the exercise are equally important for patient care in a field environment. Therefore, a score for each skill on the competency based exercise was obtained by calculating the proportion or percentage of critical elements performed correctly. Each critical element was given a pass or fail rating independent of the other critical elements of the skill. One point was given for the correct performance and no points were given for the incorrect performance of a critical element. A score for the competency based exercise was obtained by averaging the scores of all skills on the exercise.

Written Exercise

The investigator worked with the expert panel members to develop a written exercise that would assess participants' understanding of the following three battle focused functions included in the training program given to the study sites: (a) apply the law of war to field medical operations, (b) interface with the medical evacuation system, and (c) prepare patients for evacuation by the aeromedical evacuation system. Expert panel members submitted subject matter for questions related to each battle focused function. Panel members' suggestions together with field manuals, soldier training publications, and other Army publications were used to develop draft items for the written exercise.

The expert panel members met by video teleconference to review items for the written exercise in the same manner as items had been reviewed for the written exercise in the study, *Readiness Competency of Nursing Personnel in the AMEDD* (Zadinsky, 1997). They gave feedback on the format of the items and refined the content as needed. After discussing each item, panel members used a content validity scale to rate the item according to whether it was (1) not relevant, (2) somewhat relevant, (3) quite relevant, or (4) very relevant to measuring the principles of the three battle focused functions being evaluated (Lynn, 1986). Panel members' ratings were used to select items for the written exercise. Based on these ratings, the written exercise had a content validity index of 1 (Lynn, 1986).

The final version of the written exercise consisted of 24 multiple choice items (see Appendix E). Eight of the 24 items were related to each of the three battle focused functions being evaluated. The same written exercise was used for all nursing personnel. There were four possible answers for each item, and participants were instructed to select the one best

answer for each item. A score for the entire exercise was obtained by calculating the percentage of items answered correctly. A score for each subset of items related to a battle focused function was obtained by calculating the percentage of subset items answered correctly.

Semi-Structured Interview

A semi-structured interview was conducted with selected participants after they completed the posttest competency based and written exercises. The primary purpose of the interview was to elicit participants' experiences with the training program. The interview also explored participants' institutional training, operational assignments, and self development activities that may have been related to their readiness competency as measured by their competency based and written exercises. The interview was semi-structured by an interview guide, which consisted of general guiding questions addressing topical areas identified from the conceptual orientation of the study (Patton, 1990). The interview guide was used to provide "a framework within which the interviewer would develop questions, sequence those questions, and make decisions about which information to pursue in greater depth" (Patton, 1990, p. 284).

For each interview, the investigator had in hand the participant's completed competency based and written exercises and demographic questionnaire. According to the interview guide, at the beginning of the interview, the investigator would invite participants to describe how the training program had prepared them to perform well on the competency based exercise. As the investigator scanned each participant's competency based exercise, she would ask, "What training experiences helped you perform well (or poorly) on [name of skill]?" The

investigator then would scan the results of the participant's written exercise and ask, "What experiences helped you perform well (or poorly) on the part of the written exercise related to [name of subscale]?"

According to the interview guide, the investigator would use probing questions and reflective statements to encourage further details and clarification regarding participants' explanations of (a) how the training program had helped them perform well on the posttest competency based and written exercises, (b) institutional training, operational assignments, self development activities, and other experiences they perceived as having been particularly influential in their performance on the exercises, and (c) the type of training they thought would best prepare them to provide patient care in a deployed or field status. Some participants briefly described training experiences they thought they needed; others provided in-depth ideas about ways their unit could provide critical training experiences.

Study Procedures

Protection of Human Rights

The staff of the Clinical Investigation Regulatory Office, AMEDDC&S, reviewed the study proposal. They gave the study an exempt status in accordance with Army Regulation 40-38, the Clinical Investigation Program. The confidentiality and anonymity of participants were protected by using identification codes in place of individual names on all data collection forms, audiotapes, transcriptions of qualitative data, and field notes. All study reports were presented according to group findings.

Evaluator Training

Two groups of evaluators administered the competency based exercise to selected categories of nursing personnel. Evaluators were nursing personnel who had experience providing patient care in a deployed status as well as experience performing the skills on the competency based exercise they administered. There were 17 evaluators for medical surgical nurses, practical nurses, and medical specialists and 3 evaluators for operating room nurses and operating room specialists. In most cases, the same evaluators were used for each unit's pretest and posttest sessions. However, there were a few instances when this was not possible because of evaluators' other work-related responsibilities.

Evaluators completed individualized training in administering the competency based exercise before they began data collection. During the evaluators' training session, the investigator instructed the evaluators in the structure and content of the training program and explained the use of the competency based exercise. The evaluators practiced administering the competency based exercise during their training until they achieved an interrater reliability of 95% agreement. This passing percentage of agreement was set at a high level to maximize the opportunity to clarify all portions of the rating guidelines with each evaluator.

Evaluators were randomly paired with each other throughout the data collection period to obtain ongoing assessments of interrater reliability. The average percent agreement for all assessments of interrater reliability was 99%. Pairwise kappas had an average value of 0.97, with a range of 0.86 to 1.00 for the randomly paired raters (Portney & Watkins, 1993).

Testing and Training Procedures

The investigator and evaluators collected pretest and posttest data using the demographic questionnaire, competency based exercise, written exercise, and semi-structured interviews at multiple data collection sites from February 1995 through May 1995. Personnel from each unit conducted their own training program between the time of the pretest and posttest. The investigator and selected evaluators observed units' training sessions and reviewed participant handouts and training records from each unit. The investigator also interviewed unit leaders and trainers about their experiences with their training program.

Each unit that participated in the study designated one trainer as a point of contact to work with the investigator throughout the data collection period. The investigator gave the trainers for all study sites the same basic information about (a) the structure and function of the *Readiness Training Program*, (b) training guidelines, and (c) the purpose of the evaluation study. The trainers designated times when the investigator would conduct their unit's pretest and posttest sessions and selected the personnel from their unit who would participate in the study.

Pretest Session

The investigator and a team of evaluators went to each study site at the appointed time to conduct the pretest session. When participants arrived at the data collection site, the investigator described the study and the data collection procedure to them and asked if they would volunteer to participate in the study. Participants were given the demographic questionnaire and written exercise to complete in an area of the data collection site that was next to, but separate from the competency based testing area. Participants could take as long

as they wanted to complete these forms. They returned their completed questionnaire and written exercise to a research assistant, who checked the forms for completeness and legibility.

The competency based exercise was administered at skill stations that were set up in a DEPMEDS training facility or Army medical center using the same field medical equipment and supplies used for the study, *Readiness Competency of Nursing Personnel in the AMEDD* (see Appendix D). At most data collection sites, the evaluators escorted each participant between the check-in area and the skill stations. When the check-in area and skill stations were not located next to each other, participants were escorted between the two areas by a designated "runner," who carried the data collection form for the competency based exercise.

Each evaluator administered the competency based exercise to one study participant at a time, using the time limit indicated on the exercise for each skill. Subjects were instructed to do their best on each skill, but they were not forced to perform a skill if they were completely unfamiliar with it. Participants were not excused from the data collection area until a research assistant determined that the demographic questionnaire and competency based and written exercises had been completed.

Training Session

The trainers who served as their unit's point of contact for the study were given a trainer's handbook that included materials on which to base their training. They were allowed to supplement the handbook with other training materials as needed and were encouraged to be creative in developing ways to incorporate individual readiness training into their everyday clinical or training environment. Trainers were asked to encourage their nursing personnel to

use critical thinking in learning to transition their patient care from the fixed facility to different situations in a field environment.

The trainer's handbook included a list of clinical skills that were part of the training for each category of nursing personnel (see Appendix B). For each of these clinical skills, the handbook included an evaluation guide and copies of key references. All critical elements of the skills on the pretest and posttest competency based exercise were included on the skill's evaluation guide. The evaluation guide also included additional skill elements that should be included in the training.

Trainers were given a list of equipment and supplies needed to train the clinical skills in their training program (see Appendix D). They were encouraged to use the handbook to develop a principle-based training program focused on hands-on experiences performing the clinical skills. Trainers were instructed that after they reviewed the principles underlying a skill, they should focus their hands-on training on those aspects of the skill that differ from the fixed facility to the field environment.

Trainers also were given information in their handbooks to help them train the following three battle focused functions: (a) apply the law of war to field medical operations, (b) interface with the medical evacuation system, and (c) prepare patients for evacuation by the aeromedical evacuation system. The trainer's handbook included learning objectives for these three functions as well as copies of relevant pages from references used to develop these objectives. Trainers were not given a copy of the written exercise that was used in the testing sessions, but the questions on the exercise were based on the learning objectives in their handbooks.

Posttest Session

The investigator and evaluators returned to each study site to conduct the posttest session at the appointed time. The same competency based and written exercises that had been administered during the pretest session were administered in the same manner during the posttest session. During the posttest session, the investigator also obtained data by means of semi-structured interviews conducted in a private area of the data collection site.

The investigator used an interview guide to conduct these semi-structured interviews with selected participants after they completed the posttest competency based and written exercises. The investigator also conducted interviews with unit leaders and trainers to obtain information about their experiences with the training program. Each interview lasted from 20 to 90 minutes and was audiotaped by means of a microcassette recorder with a built-in microphone.

Data Analysis

Management of Data

All completed demographic questionnaires, competency based exercises, and written exercises were screened for completeness and accuracy of information. Individuals who were designated as points of contact for their unit were consulted regarding missing or illogical information. Trained data entry personnel used a double key entry process in which each data point was verified by two data entry personnel before being entered in the data set. The entire data set was subjected to computer programs that used logical expressions making various assertions about the data. These assertions were tested against each record, a report of the violations of these expressions was generated, and data collection forms were used to correct the data set as needed.

Analysis of Research Objectives

This descriptive evaluation study used simultaneous triangulation of quantitative and qualitative methods, with quantitative methods taking precedence but being complemented by qualitative methods (Morse, 1991). The procedures used for data analysis are described for each research objective.

Research Objective One

A working session with the expert panel members at the beginning of the study and a follow-up session with the expert panel members together with other subject matter experts at the conclusion of the study were used to meet the first research objective of defining the structure and function of the training program. At the first meeting, expert panel members were given the results of the study, *Readiness Competency of Nursing Personnel in the AMEDD*, to use as a basis for their discussions. The training needs on which the *Readiness Training Program* is based were identified in this original readiness study, and four of the expert panel members for this original study also were on the expert panel for this evaluation study. During the meeting at the conclusion of the study, subject matter experts also used findings from this evaluation study as a basis for their discussions.

Research Objective Two

The second research objective of describing the effectiveness of the training program was met first by scoring the competency based and written exercises and using descriptive statistics to examine the scores of each category of nursing personnel at each study site. Also, paired t-tests were used to analyze the differences between pretest and posttest scores at each site. The interview data of trainers' and participants' experiences with their training program were

used to help interpret their unit's test scores. The convention of a probability value (p-value) equal to or less than .05 was used to identify important trends in the data.

Research Objective Three

The third research objective of identifying critical training principles was met by describing common patterns or themes of factors in the interview data related to trainers' and participants' perspectives of training principles critical to the success of a training program. All interviews were audiotaped and transcribed verbatim onto the *Ethnograph*, a qualitative software program that facilitates management of text-based data (Seidel, 1988). Data were analyzed by the constant comparative method.

According to the constant comparative method of data analysis, data were systematically analyzed to compare and contrast major themes found both within each interview and also across the group of interviews (Glaser, 1978; Hammersley & Atkinson, 1989). Preliminary data analysis occurred simultaneously with data collection. Each participant's numbered Ethnograph file was read for initial insights of factors related to trainers' and participants' experiences with the training program and then analyzed to identify first level codes or indexes (Whyte, 1984).

The investigator conducted the initial analysis to identify first level codes and abstracted these codes to the conceptual categories described in the study. To increase credibility of data interpretation, the investigator conducted frequent formal and informal member checks of her interpretation of the data with selected unit leaders, trainers, and participants (Lincoln & Guba, 1985; Sandelowski, 1986). Subject matter experts in field nursing and medical

readiness training also reviewed and concurred with the investigator's interpretation of the interview data.

The investigator wrote field notes after the interviews to record personal reflections and analyze interview techniques. Both the investigator and selected evaluators who assisted with observing the training wrote field notes to record their observations and thoughts about the training being conducted. These notes described participants' characteristics, nonverbal behaviors, affect, communication processes, rapport, and general impressions. They served to contextualize interview data and to verify their credibility, consistency, and coherence (Atkinson, 1990; Jackson, 1987; Mishler, 1986; Patton, 1990).

RESULTS

Presentation of the research results consists of a description of sample characteristics followed by an explanation of the quantitative and qualitative analyses for each research objective. Release 6.12 of the SAS System for Windows was used for quantitative statistical analyses.

Sample Characteristics

The convenience sample for the pretest consisted of 360 nursing personnel at six study sites. Of these 360 personnel, 314 completed both the pretest and posttest sessions. This represents an overall retention rate through the entire testing and training period of 87%, while the retention for each site ranged from 74% to 97%. The combat support hospital site had the worst retention rate because the unit was preparing for deployment at the time of their posttest. Other reasons for participant attrition included loss of personnel from the unit, assignment of personnel to other taskings, and illness.

Because the focus of the study was on the training at each study site, only the 314 participants who completed the entire period of testing and training were included in the sample for purposes of data analysis. The distribution of these nursing personnel at the study sites according to their specialty area and grade is shown in Table 1. Note that the number of junior (E1 - E4) and senior (E5 - E8) enlisted personnel in the sample was approximately equal. However, most of the officer personnel in the sample were in the junior grades (O1 - O3). The sample included 196 personnel in the active component of the AMEDD, 1 person in the U. S. Army National Guard (ARNG), and 117 personnel in the USAR. The 1 ARNG

Table 1

Number and Percent of Participants From the Six Study Sites in Each Specialty Area and Grade Category

Specialty Area	Site						All Sites
	PNC	OBC	OAC	CSH	MEDCEN	RTS-MED	
Specialty Area							
66H		29 (22%)	44 (33%)	4 (3%)	29 (22%)	27 (20%)	133
66E						8 (100%)	8
91B10				14 (40%)		21 (60%)	35
91B20+				8 (50%)		8 (50%)	16
91C	31 (32%)			25 (25%)	14 (14%)	28 (29%)	98
91D				15 (62%)		9 (38%)	24
All	31 (10%)	29 (9%)	44 (14%)	66 (21%)	43(14%)	101 (32%)	314
Grade							
E1 - E4	27 (30%)			27 (30%)	1 (1%)	36 (39%)	91
E5 - E8	4 (5%)			35 (42%)	13 (16%)	31 (37%)	83
O1 - O3		29 (22%)	44 (33%)	3 (2%)	25 (19%)	33 (24%)	134
O4 - O5				1 (17%)	4 (66%)	1(17%)	6
All	31 (10%)	29 (9%)	44 (14%)	66 (21%)	43 (14%)	101 (32%)	314

Note. Data are presented only for participants who completed both the pretest and posttest.

Specialty Area refers to the area of concentration (AOC) or military occupational specialty (MOS) in which participants would function in a field environment. 66H = medical surgical nurse. 66E = operating room nurse. 91B10 = medical specialist with a skill level of 10. 91B20+ = medical specialist with a skill level equal to or greater than 20. 91C = practical nurse. 91D = operating room specialist. The study sites were as follows: Practical Nurse Course (PNC); Officer Basic Course (OBC); Officer Advanced Course (OAC); Combat Support Hospital (CSH); U.S. Army Medical Center (MEDCEN); Regional Training Site-Medical (RTS-MED).

participant was from the Practical Nurse Course (PNC) site, while 16 USAR participants were from the PNC site and 101 USAR participants were from the RTS-MED study site.

All nurses who may function in a field environment as medical surgical nurses were given the competency based exercise for medical surgical nurses. This included the following number of nurses with five different areas of concentration (AOCs): 3 psychiatric/mental health nurses (66C), 8 pediatric nurses (66D), 4 obstetric and gynecologic nurses (66G), 9 clinical nurses (66J), and 109 medical surgical nurses (66H). Note that since data were collected for this study, the AOC 66J has been converted to the AOC 66H.

Research Objective One

The first research objective was to define the structure and function of a medical readiness training program for nursing personnel in the active and reserve components of the AMEDD. As previously discussed, meetings with the expert panel at the beginning of the study and with expert panel members and other subject matter experts at the conclusion of the study were used to meet this objective. The investigator used the input of subject matter experts, a review of relevant education and training literature, and findings of this evaluation study to develop the structure and function of the *Readiness Training Program* as presented here.

The subject matter experts agreed that the overall aim of the training program is to enable nursing personnel to become more expert in their ability to provide patient care in a field environment. As nursing personnel become more expert in their field clinical skills and functions, it is expected that they will experience increased confidence in their ability to provide patient care in a deployed or field status. Nursing personnel with an increased sense of self confidence experience less fear of the unknown and function at a higher level when

placed in a field environment. These personnel are then in a better position to learn the unique aspects of their assigned field role that they can learn only in a field environment. Following is a brief description of the basic premises, goals, scope, and management of the *Readiness Training Program*.

Basic Premises

Following are the three basic premises of the *Readiness Training Program*: (a) There are basic differences between clinical nursing practice in tables of distribution and allowances (TDA) and tables of organization and equipment (TOE) medical treatment facilities; (b) there are functions that nursing personnel perform in support of patient care or unit management in a field environment that are unique to the field setting; and (c) training resources are limited. A brief explanation of these three premises is presented.

Differences Between TDA and TOE Clinical Nursing Practice

In peacetime, nursing personnel develop and sustain their competencies in entry level and advanced clinical skills used in their specialized areas of practice in fixed healthcare facilities. In the active component (AC) of the AMEDD, most nursing personnel work in TDA facilities during peacetime. In the reserve components (RC) of the AMEDD, many nursing personnel work in civilian healthcare facilities during peacetime. In most of these military and civilian facilities, nursing personnel function in specialized clinical roles in a high-technology, automated environment.

When in a deployed or field status, both AC and RC nursing personnel work in a field environment where they function in expanded clinical roles and perform skills they do not ordinarily perform in fixed facilities. Nursing personnel use more generalist nursing skills in

a field environment, where they must provide nursing care for patients with a wide range of battle injuries and disease and nonbattle injuries (DNBI). They also must function in the field environment without much of the automated equipment and specialized support services commonly available in fixed facilities.

Uniqueness of Functions Supporting Field Clinical Practice

Functions performed by nursing personnel in support of patient care or unit management differ from fixed facilities to the field environment. To provide patient care in a deployed or field status, nursing personnel must perform functions requiring them to interface with systems unique to the field environment--such as command and control, medical evacuation, and medical supply systems. Other unique functions involve the application of healthcare principles--such as infection control and sustainment principles--to patient care in a field environment. There is a unique knowledge base underlying performance of these functions in a field environment.

Limited Resources for Training

Training resources are limited and therefore available resources must be maximized to meet identified training needs. Resources can be maximized by focusing training on selected skills and functions. Trainers should focus on clinical skills that are performed frequently or performed as life-saving measures in a field environment but are not routinely performed in fixed MTFs. Skills should be selected for training separately for each area of concentration/military occupational specialty (AOC/MOS). Likewise, trainers should focus on functions that are critical to the support of patient care or unit management in a field environment but are not

routinely performed in the same manner in fixed MTFs. These functions are referred to as battle focused functions.

Goals

The two primary goals of the *Readiness Training Program* are aimed at providing training for nursing personnel who function in a deployed or field status in one of the following roles in the active or reserve components of the AMEDD:

- Medical-Surgical Nurses (66H)
- Operating Room Nurses (66E)
- Nurse Anesthetists (66F)
- Medical Specialists (91B)
- Practical Nurses (91C)
- Operating Room Specialists (91D)

The category of medical surgical nurses refers to all nurses who may function in a medical surgical nursing role in a deployed or field status, even though they may not work in this role in a fixed facility. This includes nurses who work in community health, obstetric-gynecologic, pediatric, and psychiatric nursing roles.

Goal 1: Develop Competencies in Clinical Skills

The first goal of the *Readiness Training Program* is to develop the competencies of nursing personnel in clinical skills they perform frequently or perform as lifesaving measures in a field environment, but do not routinely perform in fixed healthcare facilities. These clinical skills can be categorized as (a) equipment skills, (b) basic skills, and (c) expanded role skills. These categories of clinical skills provide guidance for training, but they are flexible enough to accommodate the various training needs of units in different settings. Trainers should individualize the skills they select for training based on their unit's mission essential task list

(METL) and the AOC/MOS of nursing personnel being trained. Following is a brief description of the three categories of clinical skills. Note that many skills can be placed in more than one category.

Equipment Skills.

The first category of skills are those performed using field medical equipment, which generally are operated differently from equipment used to perform the same or similar skills in fixed facilities. For example, the 5-lead electrode system of the Hewlett Packard cardiac monitor recorder makes it different from most cardiac monitor recorders in fixed facilities. The two-bottle water-seal system of the Gomco surgical suction apparatus makes it different from most suction machines in fixed facilities. Nursing personnel who know how to monitor patients on a cardiac monitor and how to manage patients on a surgical suction apparatus in fixed facilities still need training on the operation of appropriate field medical equipment to perform the same skills in a field environment.

Basic Skills.

The second category of skills are those performed in the field without automated equipment or specialized support services commonly available in fixed MTFs. For example, nursing personnel rely on pharmacy to provide unit dose services in fixed MTFs, but they cannot always rely on pharmacy to provide these services in a theater of operations (DMSB, 1994). Also, various types of intravenous flow meters and infusion pumps are readily available in fixed MTFs, but they are not always available in a field environment. Therefore, nursing personnel need to sustain their competencies in skills such as preparing an IV additive, calculating an oral medication dosage, and calculating the flow rate for an IV infusion.

Expanded Role Skills.

The third category of skills are those performed by nursing personnel in aspects of their role that are expanded from the fixed facility to the field environment. The nature of field nursing practice requires that nursing personnel be prepared to perform skills in their field nursing roles which they do not routinely perform in their fixed facility roles. Expanded role skills differ for each AOC/MOS. For example, administering a blood transfusion is an expanded role skill for medical specialists and practical nurses because most of these personnel currently do not perform this skill within their scope of practice in fixed facilities. However, administering a blood transfusion is not an expanded role skill for medical surgical nurses because they routinely perform this skill within their scope of practice in their fixed facility roles.

Nursing personnel need to perform expanded role skills in a field environment. Both battle injuries and also disease and nonbattle injuries (DNBI) cut across the entire spectrum of healthcare. To be prepared to function in their patient care roles in a field environment, nursing personnel must have both a broad knowledge base of healthcare principles and also practical experience in a wide range of clinical skills critical to the care of battle injuries and DNBI commonly seen during military operations. Furthermore, the number and acuity of patients in a field environment fluctuate depending on factors such as the intensity of conflict, but there is no backup pool of medical personnel to draw upon in times of critical need. For example, in mass casualty situations nursing personnel in a field MTF cannot expect that specialty personnel, such as a respiratory specialist or an orthopedic specialist, will always be

available to meet patient care needs. In these situations, nursing personnel must be prepared to perform skills they do not routinely perform in their fixed facility roles.

Goal 2: Develop Proficiencies in Battle Focused Functions

The second goal of the *Readiness Training Program* is to develop the proficiencies of nursing personnel in battle focused functions, which are defined as actions performed by nursing personnel in support of patient care or unit management in a field environment. Some of these functions require nursing personnel to interface with the command and control, medical evacuation, or medical supply system when providing patient care in a field environment. Other functions require nursing personnel to apply infection control or sustainment principles to patient care in a field environment. Following are the five categories of battle focused functions that are based on knowledge of these systems and principles:

- Command and Control Functions
- Medical Evacuation Functions
- Medical Supply Functions
- Infection Control Functions
- Sustainment Functions

These categories of functions provide guidance for training, but they are flexible enough to accommodate the various training needs of different units. Trainers should individualize the battle focused functions selected for training based on both their unit's METL and also the needs of nursing personnel being trained. Following is a brief description of the five categories of battle focused functions.

Field Systems.

The command and control, medical evacuation, and medical supply systems are field systems that have a unique knowledge base. Nursing personnel must understand these systems

so they can interface with them to provide patient care in a field environment. The following three categories include battle focused functions which require nursing personnel to apply their knowledge of field systems to patient care in a deployed or field status.

Command and control functions are actions which require nursing personnel to interface with the command and control system when providing patient care in a field environment. The command and control system is designed for "the exercise of command that is the process through which the activities of military forces are directed, coordinated, and controlled to accomplish the mission. This process encompasses the personnel, equipment, communications, facilities, and procedures necessary to gather and analyze information, to plan for what is to be done, and to supervise the execution of operations" (FM 8-10-3, 1995, p. Glossary-8). The command and control system includes the use of information pertaining to the law of war. An example of a command and control function is to apply the law of war to field medical operations.

Medical evacuation functions are actions which require nursing personnel to interface with the medical evacuation system when providing patient care in a field environment. The medical evacuation system is a modern, complex transportation system designed to provide "the timely, efficient movement and en route care by medical personnel of the wounded, injured, or ill persons from the battlefield and other locations to MTFs. . . . Evacuation begins when medical personnel receive the injured or ill soldier and continues as far rearward as the patient's medical condition warrants or the military situation requires" (FM 8-10-6, 1991, p. 1-2). An example of a medical evacuation function is to prepare patients for evacuation by the aeromedical evacuation system.

Medical supply functions are actions which require nursing personnel to interface with the medical supply system when providing patient care in a field environment. The medical supply system is that aspect of the combat health logistics system dealing with the procurement, distribution, and storage of medical matériel, including medical-peculiar repair parts (Class VIII supplies) (FM 8-10, 1991). An example of a medical supply function is to request field medical equipment and supplies.

Healthcare Principles.

Infection control and sustainment principles also have a unique knowledge base for the field environment. Nursing personnel must understand and be able to apply these principles to their patient care when working in a deployed or field status. Following is a brief explanation of infection control and sustainment battle focused functions, which require the application of these principles to patient care in a field environment.

Infection control functions are actions performed to prevent and control infections associated with (a) battle injuries and (b) disease and nonbattle injuries (DNBI) in a field environment. These actions require nursing personnel to apply infection control principles to the practice of nursing in a field environment for the purpose of minimizing infection and its associated disability, morbidity, and mortality. An example of an infection control function is to manage field waste.

Sustainment functions are actions performed in support of patients, oneself, or other staff to ensure ongoing patient care services in a field environment, to include patient care in aid stations, medical companies, dispensaries, clinics, and hospitals in all levels of care. These actions require nursing personnel to apply sustainment principles to their work in a field

environment. An example of a sustainment function is to develop staffing and patient flow plans for a mass casualty situation.

Scope

The *Readiness Training Program* is limited in scope to individual training designed to prepare nursing personnel for tasks that are critical to their patient care roles in a deployed or field status, but that are not routinely performed in the same manner in fixed MTFs. That is, the *Readiness Training Program* does not focus on training clinical skills commonly performed by nursing personnel in fixed healthcare facilities. Many skills are commonly performed in the same or a similar manner in both fixed facilities and the field environment. Nursing personnel can sustain their basic competencies in these skills when providing patient care in fixed facilities.

Trainers should take particular notice of this first limitation in the scope of the *Readiness Training Program*. It is expected that personnel who have had minimal or no experience in patient care roles in fixed facilities will need more intensive training in both clinical skills and functions than is planned for the general training program. Leaders and trainers must take the background of their personnel into account when planning their training and allow for adequate training resources to meet the individual needs of their nursing personnel.

Other limitations in the scope of the *Readiness Training Program* are that it does not address clinical skills related to treatment of nuclear-biological-chemical casualties and it does not address soldier skills. Also, the *Readiness Training Program* does not address specialized individual training (a) for psychiatric nurses in their field role on combat stress control teams or (b) for community health nurses in their preventive medicine role in the field environment.

Finally, the *Readiness Training Program* does not address tasks related to patient documentation. At the time the *Readiness Training Program* was being developed, there were no approved standard patient documentation forms for use in the field environment.

Training Management

Training management is "the process commanders and their staff use to plan training and related resource requirements needed to conduct and evaluate training. It involves all echelons and applies to any unit in the Army regardless of strength, mission, organization, or equipment assigned" (TRADOC Reg 350-70, 1995, p. Glossary-30). Training management, as used in the *Readiness Training Program*, is a cycle which consists of the following four processes:

- Select Tasks for Training
- Plan Training Based on an Assessment of Selected Tasks
- Execute Training Using Methods Designed to Train to Standard
- Assess Training Based on a Continuous Evaluation of Tasks

The management of readiness training for nursing personnel should not be conducted in isolation from the rest of the unit's training. Instead, training conducted with nursing personnel on clinical skills and functions must be integrated with the entire unit's training management cycle. Detailed guidance on the four processes of selecting tasks for training and planning, executing, and assessing training can be found in FM 25-100 (1988) and FM 25-101 (1990). Following is a brief overview of these four processes of training management as applied to the *Readiness Training Program*.

Select Tasks for Training

Leaders must selectively identify and train tasks that accomplish the unit's critical missions. These tasks, which are based on the mission essential task list (METL), focus the training plan for the entire unit and thus allow the unit's training requirements to be narrowed to an achievable number. When the supporting individual task list for each mission essential task is being developed, leaders must ensure that clinical skills and functions which support performance of the unit's METL are selected as individual tasks for training their nursing personnel.

An expert panel of nurses developed training priorities for field skills for nursing personnel in six different AOCs/MOSs (Zadinsky, 1997). Training priorities were based on the extent to which personnel in each category perform the skill either frequently or as a life-saving measure in the field environment, but do not routinely perform the skill in fixed healthcare facilities. These skills were not selected separately for different field environments, and they do not need to be trained in any particular order.

Expert panel members also established five categories of battle focused functions for training. Training priorities for these battle focused functions for each category of nursing personnel were developed based on input from subject matter experts. Trainers need to select those personnel who they will train on each function. Some of these functions are very general; others refer to more specific actions performed by nursing personnel.

In addition to selecting skills and functions for training nursing personnel in the unit, leaders and trainers must determine which AOCs/MOSs to train on the selected skills and functions. When making this determination, they must keep in mind the basic premises and

goals of the *Readiness Training Program*. Resources must be maximized by focusing training for nursing personnel on clinical skills that personnel in their AOC/MOS perform frequently or perform as life-saving measures in a field environment, but do not routinely perform in fixed MTFs. Likewise, leaders must focus training for nursing personnel on functions that are critical to the support of patient care or unit management in a field environment, but that are not routinely performed in the same manner in fixed MTFs.

Plan Training Based on an Assessment of Selected Tasks

A training plan includes "a detailed description of the actions, milestones, and resources required to implement a training strategy" (TRADOC Reg 350-70, 1995, p. Glossary-30). Guidance in Army publications on developing and using long-range, short-range, and near-term training plans should be used (see FM 25-100, 1988 & FM 25-101, 1990). Plans to train nursing personnel on clinical skills and functions should be integrated with the unit's master training plan.

Assessment of a unit's strengths and weaknesses is the base upon which a training strategy is developed. The process of assessing training through measures such as firsthand observations and various training evaluations is continuous. However, formal assessment is conducted at the start of the planning process and after the execution of a major training program.

Formal assessment of the skill and knowledge levels of nursing personnel in tasks selected for training should consist of a performance test whenever possible. A performance checklist can be used as a pretest for the clinical skills. A performance checklist is developed by breaking down a training objective into elements that must be correctly performed to

determine whether an individual satisfactorily meets the performance standards (TRADOC Reg 350-70, 1995). The pretest for functions which cannot actually be performed in a unit's training environment can consist of a series of questions asking an individual to describe elements of the task performance.

Trainers should use the results of their initial formal assessment to refine their training plans. For example, nursing personnel demonstrating expertise on tasks during the pretest can be assigned to assist with training selected skills and functions as needed. Personnel demonstrating minor weaknesses on one or more tasks can be scheduled for quick refresher training on the tasks. Personnel who have no understanding of one or more tasks should be scheduled for training on the identified tasks when resources are available for more intensive training.

As previously stated, assessment is the base upon which a training strategy is developed.

As defined in TRADOC Reg 350-70 (1995), a training strategy -

- Describes the methods and resources required to implement a training concept
- Lays out the who, what, where, when, why, how, and cost of the training
- Includes determining the training site and media selected to train each critical task

More information on developing a training strategy can be obtained from Army publications such as FM 25-101 (1990). Important aspects of the training strategy for training clinical skills and functions include the following:

- Select testing and training sites and dates
- Obtain required equipment and supplies
- Select and train the trainers
- Develop testing and training materials, including patient-care scenarios
- Schedule personnel for testing and training

Thorough preparation of the trainers for training is critical to the success of medical readiness training conducted in any unit. As discussed in FM 25-101 (1990), leaders can use training rehearsals to -

- Identify weak points in the training plan
- Ensure all safety and environmental considerations are met
- Teach effective training techniques
- Ask pertinent questions to determine if a trainer is proficient in the tasks being trained
- Coach trainers until they feel confident in their ability to train

Execute Training Using Methods Designed to Train to Standard

Clinical Skills.

It is recommended that performance-oriented training be used to execute training on clinical skills. This training should include (a) presentation of explanatory information and principles underlying skill performance, (b) skill demonstration, and (c) practical exercise. Practical exercise, which is the hands-on application of the performance required to meet the training objective, is the focus of performance-oriented training (TRADOC Reg 350-70, 1995).

Practical exercise should focus on aspects of the skills that differ from the fixed facility to the field environment because of differences in equipment, supplies, availability of support services, and/or roles of nursing personnel.

When training to standard, it is critical that nursing personnel practice each skill until a trainer determines they have achieved mastery--i.e., they have performed the training objective within the prescribed conditions and to the stated standard. Additionally, nursing personnel would benefit from the opportunity to practice their newly-acquired skills during a patient play exercise. This type of training on clinical skills can be incorporated into a unit's training schedule at their duty station or at an RTS-MED facility.

Battle Focused Functions.

Training on battle focused functions should be adapted as needed to meet a unit's training needs in their particular training environment. For example, these functions can be used in a professional development course for commissioned or noncommissioned officers. A subject matter expert should present the material in the task summary, but also should give nursing personnel the opportunity to discuss the material and apply their newly acquired knowledge to realistic patient care scenarios developed for training.

Scenarios are the key to individualizing training in battle focused functions to meet the needs of a unit. Scenarios should be realistic situations that personnel are likely to encounter in their duty positions in a deployed or field status. The scenarios for these functions are like the practical exercises for clinical skills. Learning occurs when nursing personnel use their critical thinking skills to apply their knowledge to realistic patient-care scenarios.

Assess Training Based on a Continuous Evaluation of Tasks

Periodic formal and informal after-action reviews (AARs) should be used to evaluate the training on a continuous basis throughout the training process. An AAR is "a professional discussion of an event, focused on performance standards, that enables soldiers to discover for themselves what happened, why it happened, and how to sustain strengths and improve on weaknesses" (TRADOC Reg 350-70, 1995, p. Glossary-5). The use of AARs throughout the training program allows leaders, trainers, and participants to reflect on what is happening during training, to make necessary changes in the training program as problems arise, and to refine the focus as needed for future training. Guidance on planning, preparing for,

conducting, and following up AARs is available in Army publications such as FM 25-100 (1988), FM 25-101 (1990), and TC 25-20 (1993).

A formal assessment should be made of the skill and knowledge levels of nursing personnel after the skills and functions have been trained. Use of a posttest allows leaders to determine whether their personnel have been trained to standard on the selected tasks. The same planning considerations exist for both the pretest and posttest. For example, the posttest should consist of a performance test for the clinical skills that were trained. The posttest for battle focused functions which cannot actually be performed in a unit's training environment can consist of a series of questions asking an individual to describe elements of the task performance. Trainers may decide to use the same assessments for the pretest and posttest.

Unit leaders should submit formal reports of the status of training on clinical skills and functions to those responsible for overseeing the training of nursing personnel. The Unit Status Report is one tool that can be used for reporting this information in the Active Army, the Army National Guard, and the U. S. Army Reserve. Designated MTOE and TDA units currently submit recurring Unit Status Reports in accordance with JCS Publication 1-03.3. These reports are designed to measure the status of a unit's resources and training by (a) comparing selected personnel, equipment, and training factors to wartime requirements and (b) obtaining the commander's overall assessment of his unit (AR 220-1, 1993). The Unit Status Report should include a summary of the number of nursing personnel in the unit who have been trained to standard on the clinical skills and functions selected for training.

Research Objective Two

The second research objective was to describe the effectiveness of the *Readiness Training Program* when implemented in training environments commonly found in the active and reserve components of the AMEDD. As previously discussed, unit trainers at each of the following six sites were given the same training guidelines and materials: (a) Practical Nurse Course (PNC), (b) Officer Basic Course (OBC), (c) Officer Advanced Course (OAC), (d) Medical Center (MEDCEN), (e) Combat Support Hospital (CSH), and (f) Regional Training Site-Medical (RTS-MED). Based on the training guidelines, trainers designed the training programs for their nursing personnel and scheduled their unit's pretest and posttest sessions with the investigator. Following are findings from baseline data collected at the pretest sessions followed by evaluation data for the training programs at each of the six study sites.

Baseline Pretest Evaluations

The pretest and posttest competency based and written exercises for each site were scored as previously described. Recall that a percent score for the competency based exercise was obtained by averaging the percentage of critical elements performed correctly for each skill on the exercise. A percent score for the written exercise was obtained by calculating the percentage of items answered correctly. Summary statistics of the competency based exercise were calculated separately for each of the categories of nursing personnel assessed on a unique set of skills (see Appendix B). Although one written exercise was administered to all nursing personnel, summary statistics also were calculated separately for each of these same categories of nursing personnel.

Mean pretest percent scores on the competency based exercise for nursing personnel in the specialty areas at the six sites ranged from 20% to 64% (see Table 2). On the average, before they received any training nursing personnel correctly performed 44% of the critical elements of the field clinical skills that they should be prepared to perform in their specialty area. Mean percent scores on the written exercise for the six categories of nursing personnel at the six study sites ranged from 41% to 72% (see Table 3). On the average, before they received any training nursing personnel correctly answered 52% of the items on the written exercise.

Pretest percent scores on each skill for all study sites were analyzed to present summary statistics for the individual medical surgical and perioperative skills (see Table 4). After reviewing participants' percent scores on the individual skills, expert panel members concluded that, as was observed in a previous study of these clinical skills, the greater the difference in how the skill is performed between the fixed facility and the field environment, the lower the mean percent score for the skill (Zadinsky, 1997). They also noted that some skills associated with low percent scores, such as those in the expanded role skill category, were not performed by most nursing personnel in those specialty areas in their peacetime roles in fixed facilities.

Table 2

Mean Percent Scores (M (SD)) on the Pretest Competency Based Exercise for NursingPersonnel in Each Specialty Area for the Six Study Sites

Specialty Area	Site						All Sites
	PNC	OBC	OAC	CSH	MEDCEN	RTS-MED	
66H	n/a	41 (15)	48 (11)	64 (12)	52 (11)	49 (15)	48 (14)
66E	n/a	n/a	n/a	n/a	n/a	41 (11)	41 (11)
91B10	n/a	n/a	n/a	30 (14)	n/a	30 (14)	30 (14)
91B20+	n/a	n/a	n/a	45 (16)	n/a	20 (12)	32 (19)
91C	39 (14)	n/a	n/a	55 (14)	54 (12)	35 (12)	44 (16)
91D	n/a	n/a	n/a	53 (13)	n/a	24 (10)	42 (19)
All	39 (14)	41 (15)	48 (11)	49 (17)	53 (11)	36 (16)	44 (16)

Note. The means and standard deviations (M (SD)) of percent scores on the pretest competency based exercise are presented only for participants who completed both the pretest and posttest. Specialty Area refers to the area of concentration (AOC) or military occupational specialty (MOS) in which participants would function in a field environment. 66H = medical surgical nurse. 66E = operating room nurse. 91B10 = medical specialist with a skill level of 10. 91B20+ = medical specialist with a skill level equal to or greater than 20. 91C = practical nurse. 91D = operating room specialist. The study sites were as follows: Practical Nurse Course (PNC); Officer Basic Course (OBC); Officer Advanced Course (OAC); Combat Support Hospital (CSH); U.S. Army Medical Center (MEDCEN); Regional Training Site-Medical (RTS-MED). n/a = not applicable because no personnel in the specialty area were tested at the specified site.

Table 3

Mean Percent Scores (M (SD)) on the Pretest Written Exercise for Nursing Personnel in Each SpecialtyArea for the Six Study Sites

Specialty Area	Site						All Sites
	PNC	OBC	OAC	CSH	MEDCEN	RTS-MED	
66H	n/a	54 (13)	60 (11)	72 (20)	52 (13)	54 (15)	56 (13)
66E	n/a	n/a	n/a	n/a	n/a	46 (8)	46 (8)
91B10	n/a	n/a	n/a	51 (14)	n/a	44 (12)	47 (13)
91B20+	n/a	n/a	n/a	53 (10)	n/a	41 (8)	47 (10)
91C	43 (10)	n/a	n/a	56 (12)	56 (13)	51 (14)	50 (13)
91D	n/a	n/a	n/a	45 (13)	n/a	45 (14)	45 (13)
All	43 (10)	54 (13)	60 (11)	53 (14)	53 (12)	49 (14)	52 (14)

Note. The means and standard deviations (M (SD)) of percent scores on the pretest competency based exercise are presented only for participants who completed both the pretest and posttest. Specialty Area refers to the area of concentration (AOC) or military occupational specialty (MOS) in which participants would function in a field environment. 66H = medical surgical nurse. 66E = operating room nurse. 91B10 = medical specialist with a skill level of 10. 91B20+ = medical specialist with a skill level equal to or greater than 20. 91C = practical nurse. 91D = operating room specialist. All = all specialty areas. The study sites were as follows: Practical Nurse Course (PNC); Officer Basic Course (OBC); Officer Advanced Course (OAC); Combat Support Hospital (CSH); U.S. Army Medical Center (MEDCEN); Regional Training Site-Medical (RTS-MED). n/a = not applicable because no personnel in the specialty area were tested at the specified site.

Table 4

Summary Statistics of Percent Scores for Medical Surgical and Perioperative Skills on the PretestCompetency Based Exercise for Nursing Personnel at All Study Sites

Skill (AOC / MOS)	<u>M</u>	<u>SD</u>	Mode	<u>Mdn</u>	Range	<u>n</u>
Skills Performed Using Field Medical Equipment						
Operate a ventilator (66H, 91C)	4	13	0	0	0 - 90	231
Obtain a 12-Lead EKG (66H, 91B, 91C)	13	28	0	0	0 - 100	282
Operate a surgical suction apparatus (66H, 66E, 91B, 91C)	20	30	0	0	0 - 100	290
Set up a blood recovery and delivery system (91D)	24	29	0	0	0 - 80	24
Operate a cardiac monitor recorder (66H, 66E, 91B, 91C)	33	32	0	33	0 - 100	290
Operate a field sterilizer (66E, 91D)	34	23	47	37	0 - 80	32
Operate an intermittent suction-aspirator system (66E, 91D)	37	30	0	43	0 - 100	32
Operate a pulsed irrigation and suction system (66E, 91D)	38	41	0	19	0 - 100	32
Operate a field portable oropharyngeal suction apparatus (66H, 91B, 91C)	40	41	0	20	0 - 100	282
Operate a mobile ultrasonic cleaner (66E, 91D)	53	31	71	57	0 - 100	32
Operate a field oxygen delivery system (66H, 91B, 91C)	54	37	88	75	0 - 100	282
Operate an electrosurgical apparatus (66E, 91D)	58	30	80	80	0 - 100	32
Operate a field operating table (66E, 91D)	64	18	67	67	25 - 92	32

(table continues)

Table 4 (continued)

Skill (AOC / MOS)	<u>M</u>	<u>SD</u>	Mode	<u>Mdn</u>	Range	<u>n</u>
Skills Performed Without Automated Equipment or Specialized Support Services						
Measure CVP using a water manometer system (66H)	28	39	0	0	0 - 100	133
Perform high level disinfection (66E, 91D)	29	24	20	20	0 - 100	32
Prepare sterile items for storage (66E, 91D)	34	24	20	40	0 - 100	32
Calculate the flow rate for an IV infusion (66H, 66E, 91B, 91C)	40	49	0	0	0 - 100	290
Prepare an IV additive (66H, 66E, 91C)	78	25	100	80	0 - 100	239
Measure a patient's blood pressure (66H, 91B, 91C)	79	22	100	83	0 - 100	282
Measure a patient's oral temperature (66H, 91B, 91C)	81	21	100	80	0 - 100	282
Calculate an oral medication dosage (66H, 91B, 91C)	85	35	100	100	0 - 100	282
Skills Performed in an Expanded Role in the Field						
Set up Buck's unilateral leg traction (66H, 91B, 91C)	4	13	0	0	0 - 89	282
Perform a needle chest decompression (91B20+)	19	30	0	0	0 - 100	16
Intubate a patient (91B20+)	27	35	0	5	0 - 90	16
Manage peritoneal dialysis (66H)	28	28	0	29	0 - 86	133
Administer blood to a patient (91B, 91C)	35	31	0	40	0 - 100	149
Treat a hemorrhaging patient (91B)	50	30	86	43	0 - 100	51

(table continues)

Table 4 (continued)

Skill (AOC / MOS)	<u>M</u>	<u>SD</u>	Mode	<u>Mdn</u>	Range	<u>n</u>
Triage casualties (66H, 91B)	69	32	100	75	0 - 100	184

Note. All skills performed using field medical equipment are placed in that skill category, but it is noted that many skills could be placed in more than one skill category. The categories of nursing personnel who were assessed on the skill are shown in parentheses after the name of the skill.

These categories refer to the area of concentration (AOC) or military occupational specialty (MOS) in which participants would function in a field environment. 66H = medical surgical nurse. 66E = operating room nurse. 91B = medical specialists of all skill levels. 91B20+ = medical specialists with a skill level equal to or greater than 20. 91C = practical nurse. 91D = operating room specialist.

Evaluation of Training Programs

Following is a brief description of the training program at each of the study sites followed by an analysis of the pretest and posttest results for these sites. This section does not include a presentation of individual problems encountered implementing the training program at each site. Instead, these problems are part of the data analyzed for the third research objective, which focuses on training principles critical to the success of the *Readiness Training Program*.

Training Programs

AMEDDC&S Sites.

Training programs at the Practical Nurse Course (PNC), Officer Basic Course (OBC), and Officer Advanced Course (OAC) sites consisted of short, intensive, structured classes conducted in the two-day interval between the pretest and posttest sessions. All training was conducted in skill stations and a classroom area set up in a DEPMEDS training site utilized by the AMEDDC&S. Trainers for these sites were nursing personnel assigned to the AMEDDC&S and to a Combat Support Hospital as well as selected participants from the courses. Trainers were assigned to teach skills in which they had experience, and they were given time to practice their instruction before the training program began. All study participants received a handbook that had the conditions, standards, and performance measures of the skills being taught as well as other explanatory information about the skills. This handbook was based on the trainer's handbook that the investigator provided for the unit.

For their skills training, participants were assigned to small groups. Each group rotated through the skill stations in a "round robin" fashion on an established schedule until everyone received training in all skills. At each station, the trainer demonstrated the skill to be

performed and gave participants the opportunity for "hands-on" practice until they achieved skill proficiency.

For their training in battle focused functions, participants also were assigned to small groups. All participants were given a handbook with the learning objectives for the battle focused functions and relevant pages from the key references provided by the investigator. Participants were given time to work together in their groups. One of the participants in each group served as the group trainer. These group trainers did not have any particular expertise in the functions being trained, and they did not receive any trainer's training. However, they worked with their group to study the materials in the handbook.

MEDCEN Site.

The training program at the MEDCEN site consisted of self-directed training conducted in the 12-week interval between the pretest and posttest sessions. Skill stations were set up in a classroom in the medical center. Trainers were nursing personnel assigned to a Combat Support Hospital. All study participants received a copy of the trainer's handbook that the investigator provided for the unit.

A trainer was available in the skill stations at designated times throughout the period of training. Nursing personnel were expected to study their handbook on their own time, and they could come to the skill stations at any of the designated training times. Also, trainers provided classes in some of the skills in the training program during a field exercise that many study participants attended, and these participants could practice using field medical equipment on their own time during the exercise. However, most participants reported that they did not attend any training sessions at the medical center and did not practice using the field medical

equipment during the field exercise. Also, most participants reported that they studied their handbook very little or not at all.

No classes were provided for the battle focused functions in the training program. Nursing personnel were expected to study the materials in the handbook on their own time. Recall that the handbook included learning objectives for the three functions that were being tested as well as copies of relevant pages from key references for these objectives.

Combat Support Hospital Site.

The training program at the combat support hospital site consisted of structured classes conducted in the four-week interval between the pretest and posttest sessions. Training was conducted in skill stations set up in the unit's DEPMEDS training site. Nursing personnel from the unit were assigned to train skills in which they had experience. Trainers were given instruction in the training program and assistance with preparing their training classes.

For the unit's training in field skills, classes were given to small groups of participants in the skill stations. In each class, the trainer demonstrated the skill to be performed and gave participants the opportunity for "hands-on" practice until they achieved skill proficiency. Study participants had access to the skill stations, and they could return to them at a later time for more practice as needed.

Classes also were scheduled for training battle focused functions. Nursing personnel in the unit served as trainers. They studied the material in the trainer's handbook and presented it to participants in a lecture format, using examples from their experiences in a field environment.

At the time of the training and posttest sessions, most participants at this site were busy preparing to deploy with their unit. Therefore, some participants were not able to attend all of

the training in field skills. Additionally, only a very small number of study participants were able to attend the classes that had been planned for training the battle focused functions.

RTS-MED Site.

The training program at the Regional Training Site-Medical (RTS-MED) study site consisted of structured classes and a field exercise conducted during the unit's annual training in the six-day interval between the pretest and posttest sessions. Training was conducted in the DEPMEDS medical facility that the unit set up for their annual training. Nursing personnel from the unit were assigned to train skills in which they had experience. They studied the materials in the trainer's handbook that were pertinent to their assigned skills and practiced giving classes to each other before the training program began.

Classes in each skill were offered several times throughout the day and night to make them available to nurses on all shifts. Participants generally were very excited about being given the opportunity to learn individual field skills during their annual training time through hands-on practice of the skills in a realistic field environment. Trainers presented practical explanatory information about the skill, demonstrated skill performance, and supervised study participants during their "hands-on" practice. Participants practiced until they achieved skill proficiency or until the trainers had to go to another scheduled class. Although every attempt was made to make classes available to all nursing personnel, it should be noted that some participants were not able to attend all classes for their assigned skills, and other participants reported that they did not have a sufficient amount of "hands-on" practice time in their classes.

Classes for training battle focused functions also were offered several times throughout the day and night. Unit personnel were assigned to train functions in which they had experience.

They studied the material in the trainer's handbook and presented it to participants in a lecture format, using scenarios based on their experiences in a field environment. It should be noted that some participants reported they were not able to attend classes for all of the battle focused functions being trained or that they did not learn well from classes given very late at night or very early in the morning.

Nursing personnel practiced performing the skills they had just learned during their 72-hour patient play exercise. Nursing leaders had planned that patients who would be admitted to their hospital during this exercise would have conditions requiring use of the skills that had just been trained. Thus, nursing personnel throughout the hospital were able to obtain additional practice performing the skills with the required equipment and supplies in their patient care areas.

Test Results

Paired t-tests were used to measure changes in participants' percent scores on the competency based and written exercises from the pretest to the posttest assessment periods at each study site. These results are presented in Tables 5 and 6 for each specialty area at a site as well as for all participants at a site to help identify important trends in the data. It should be noted that because participants in each specialty area were assessed on a unique set of skills in the competency based exercise, test results for this exercise based on all personnel at a study site should be interpreted with caution.

For the competency based exercise, significant differences between pretest and posttest scores ($p < .05$) were noted at all study sites (see Table 5). The AMEDDC&S sites had the largest mean increase in test scores as well as the highest posttest scores. These sites had the

most structured training program and the shortest training interval between the pretest and posttest sessions. The medical center site, which conducted self-directed training, had the smallest mean increase in percent scores. The majority of participants at this site reported that they studied very little or not at all for their training program, and very few of these participants had any performance-oriented training. The combat support hospital site, where many participants did not attend all of their training sessions because the unit was preparing for deployment, had the next smallest mean increase in percent scores.

Participants at all sites had higher posttest scores and showed more improvement in the competency based exercise than in the written exercise. Furthermore, many participants reported that they did not attend the training classes or did not have adequate training in the battle focused functions. However, small but significant differences between pretest and posttest scores ($p < .05$) on the written exercise were noted at all study sites except the medical center site, where most participants reported that they did not study the battle focused functions (see Table 6). This site also had the lowest mean change on the written exercise scores after training. The few participants who did any studying for the training program at the medical center site focused on the assigned clinical skills, not on the battle focused functions in their self-study packet. The next lowest mean change on the written exercise scores was found at the combat support hospital site, where classes on the battle focused functions were very poorly attended or were canceled because they had been scheduled at a time when participants had to finish their preparations for the unit's deployment.

Table 5

Means, Standard Deviations, and Paired t Tests for Pretest and Posttest Percent Scores on the Competency Based Exercise for Nursing Personnel in Each Specialty Area for the Study Sites

Specialty Area	Pretest Scores <u>M</u> (<u>SD</u>)	Posttest Scores <u>M</u> (<u>SD</u>)	Change Scores (Posttest - Pretest) <u>M</u> (<u>SD</u>)	<u>n</u>	<u>t</u>	<u>p</u>
Practical Nurse Course Site						
91C	39 (14)	85 (9)	46 (14)	31	17.6	.0001
Officer Basic Course Site						
66H	41 (15)	92 (6)	51 (15)	29	18.3	.0001
Officer Advanced Course Site						
66H	48 (11)	86 (8)	37 (11)	44	21.9	.0001
Combat Support Hospital Site						
66H	64 (12)	82 (16)	18 (10)	4	3.5	.0407
91B10	30 (14)	72 (11)	41 (12)	14	12.8	.0001
91B20+	45 (16)	64 (17)	19 (18)	8	2.9	.0228
91C	55 (14)	81 (11)	26 (15)	25	8.5	.0001
91D	53 (13)	79 (10)	26 (14)	15	7.2	.0001
All	49 (17)	77 (13)	28 (16)	66	14.1	.0001
Medical Center Site						
66H	52 (11)	61 (16)	9 (16)	29	3.1	.0039
91C	54 (12)	60 (9)	6 (12)	14	1.9	.0836
All	53 (11)	61 (14)	8 (14)	43	3.7	.0007

(table continues)

Table 5 (continued)

Specialty Area	Pretest Scores <u>M</u> (<u>SD</u>)	Posttest Scores <u>M</u> (<u>SD</u>)	Change Scores (Posttest - Pretest) <u>M</u> (<u>SD</u>)	<u>n</u>	<u>t</u>	<u>p</u>
Regional Training Site-Medical (RTS-MED) Site						
66H	49 (15)	76 (14)	26 (14)	27	9.5	.0001
66E	41 (11)	76 (8)	35 (11)	8	9.0	.0001
91B10	30 (14)	57 (17)	27 (15)	21	8.6	.0001
91B20+	20 (12)	51 (14)	31 (15)	8	6.1	.0005
91C	35 (12)	66 (14)	31 (15)	28	11.1	.0001
91D	24 (10)	62 (10)	38 (13)	9	9.1	.0001
All	36 (16)	66 (16)	30 (14)	101	21.0	.0001

Note. Specialty Area refers to the area of concentration (AOC) or military occupational specialty (MOS) in which participants would function in a field environment. 66H = medical surgical nurse. 66E = operating room nurse. 91B10 = medical specialist with a skill level of 10. 91B20+ = medical specialist with a skill level equal to or greater than 20. 91C = practical nurse. 91D = operating room specialist.

Table 6

Means, Standard Deviations, and Paired t Tests for Pretest and Posttest Percent Scores on the Written Exercise for Nursing Personnel in Each Specialty Area for the Study Sites

Specialty Area	Pretest Scores M (SD)	Posttest Scores M (SD)	Change Scores (Posttest - Pretest) M (SD)	n	t	p
Practical Nurse Course Site						
91C	43 (10)	69 (13)	26 (10)	31	14.7	.0001
Officer Basic Course Site						
66H	54 (13)	63 (16)	9 (15)	29	3.3	.0025
Officer Advanced Course Site						
66H	60 (11)	75 (17)	15 (16)	44	6.1	.0001
Combat Support Hospital Site						
66H	72 (20)	75 (16)	3 (11)	4	.6	.6084
91B10	51 (14)	52 (12)	1 (12)	14	.2	.8555
91B20+	53 (10)	53 (14)	1 (20)	8	.1	.9422
91C	56 (12)	62 (19)	6 (17)	25	1.7	.0974
91D	45 (13)	57 (15)	12 (16)	15	3.0	.0096
All	53 (14)	59 (17)	5 (16)	66	2.7	.0080
Medical Center Site						
66H	52 (13)	54 (13)	2 (12)	29	.9	.3672
91C	56 (13)	54 (13)	- 2 (14)	14	-.5	.6441
All	53 (12)	54 (13)	.8 (13)	43	.4	.6881

(table continues)

Table 6 (continued)

Specialty Area	Pretest Scores <u>M (SD)</u>	Posttest Scores <u>M (SD)</u>	Change Scores (Posttest - Pretest) <u>M (SD)</u>	<u>n</u>	<u>t</u>	<u>p</u>
Regional Training Site-Medical (RTS-MED) Site						
66H	54 (15)	66 (17)	11 (16)	27	3.6	.0014
66E	46 (8)	66 (16)	20 (17)	8	3.3	.0130
91B10	44 (12)	53 (15)	9 (14)	21	3.0	.0079
91B20+	41 (8)	48 (11)	7 (14)	8	1.5	.1755
91C	51 (14)	58 (11)	7 (15)	28	2.6	.0148
91D	45 (14)	56 (17)	12 (17)	9	2.1	.0703
All	49 (14)	59 (15)	10 (15)	101	6.6	.0001

Note. Specialty Area refers to the area of concentration (AOC) or military occupational specialty (MOS) in which participants would function in a field environment. 66H = medical surgical nurse. 66E = operating room nurse. 91B10 = medical specialist with a skill level of 10. 91B20+ = medical specialist with a skill level equal to or greater than 20. 91C = practical nurse. 91D = operating room specialist.

Research Objective Three

The third research objective was to identify training principles critical to the success of the *Readiness Training Program*. The investigator recorded and analyzed a total of 169 interviews with unit leaders, trainers and training program participants. The investigator also talked informally with other trainers and participants, observed training and testing sessions, and recorded field notes of her participant observations.

During the process of conducting interviews and analyzing data, the investigator reviewed selected training literature, including military field training manuals. It was discovered that the training principles emerging from data analysis were also emphasized in current Army training publications (see FM 25-100, 1988; FM 25-101, 1990). Further data analysis revealed that the following training principles were perceived by trainers and participants as critical to the success of a program designed to train nursing personnel in medical readiness skills:

- Make Leaders Responsible for Training
- Train the Trainers
- Use Appropriate Publications for Training
- Use Performance-Oriented Training
- Train using Realistic Field Conditions
- Maintain Mission-Essential Equipment and Supplies
- Train to Challenge
- Train to Sustain Proficiency

Application of these principles to the *Readiness Training Program* as described by unit leaders, trainers, and training program participants is presented here.

Make Leaders Responsible for Training

Data analysis revealed that the success of a unit's training program depended on competent, dedicated leaders who were personally involved in ensuring that the program had adequate training resources, which includes "those human, physical, financial, and time resources used to conduct and support training" (TRADOC Reg 350-70, 1995, p. Glossary-30). Participants experienced various degrees of training distractors in the form of other personal and unit responsibilities. The quality of training suffered when leaders did not ensure that time was protected for training and that the materials, personnel, equipment, and facilities required for a quality training program were made available for the training program.

It was observed that leaders created the training climate for their unit. Some unit leaders were personally involved in the training program, and they protected training time as much as possible. They required their trainers to perform their roles to standards of excellence and relied on feedback from their trainers to check the progress of training. Leaders in other units did not appear to perceive this training program as a training priority for their unit. They had ineffective lines of communication between themselves and their trainers, who often had difficulties obtaining resources required for a quality training program.

Train the Trainers

Trainers who were most successful in helping participants learn the assigned skills and functions had a thorough knowledge of the tasks they were training. They understood both the purpose of the training program and also the training methods used in the program. These trainers had gone through a "train the trainer" training program. They had been able to rehearse their training and to obtain feedback on their rehearsals from experienced trainers.

Other trainers were not as successful in helping participants become competent in the skills and functions being trained. For example, participants complained about trainers who did not know the tasks well enough to answer their questions and who did not seem to understand how the training program was being conducted. These trainers had not gone through a training program for unit trainers and had not rehearsed their presentations with subject matter experts.

Unit leaders frequently encountered the problem of finding a sufficient number of trainers with expertise in the skills and functions being trained. An important action that some unit leaders took to overcome this problem was to select a core group of competent trainers who were committed to training individuals in their unit. These trainers understood the objectives of the training program and had experience in the clinical skills and functions being trained. This core group of one or more trainers trained and supervised other trainers needed for the unit's training program.

Use Appropriate Publications

Unit trainers at the six study sites had the same Army publications to use as a basis for their training programs. The following doctrinal manuals and other Army publications were used to obtain the principles, procedures, and critical information needed to train clinical skills and functions:

- Army Regulations (ARs)
- Field Manuals (FMs)
- Military Qualification Standards (MQS) Manuals
- Mission Training Plans (MTPs)
- Soldier Training Publications (STPs)
- Soldier's Manuals (SMs)
- Technical Bulletins (TBs)
- Technical Manuals (TMs)
- Training Circulars (TCs)

Some experienced trainers talked about Army publications that were their most useful training resources. For example, some trainers reported that the field medical equipment general support maintenance manuals (TMs) written by the U. S. Army Medical Matériel Agency (USAMMA) provide information needed to understand equipment capabilities, functions, and characteristics and to set up, operate, test, and repair the equipment. When Army publications did not contain the required information, trainers used other materials--such as operating manuals for field medical equipment and healthcare literature--together with their own experience to develop new training materials.

Use Performance-Oriented Training

Training guidelines given to all units participating in the study stated that performance-oriented training should be used for training all clinical skills and should be used as much as possible for training battle focused functions. Performance-oriented training refers to "training in which learning is accomplished through performance or the actual doing of the tasks or supporting learning objectives under specific conditions until an established standard is met" (TRADOC Reg 350-70,1995, p. Glossary-21). Participants needed to understand the tasks on which they were being trained to standard as well as the task conditions. The same standards were to be enforced for a task regardless of the AOC/MOS of the participants being trained.

Participants consistently reported that the most important aspect of the training that helped them learn the new skills was their hands-on practice time. Participants complained about the lack of sufficient hands-on practice to learn the skills when: (a) they did not attend scheduled classes; (b) adequate time was not scheduled for hands-on practice; and (c) they did not understand what to practice because trainers did not explain and demonstrate all performance

measures of a skill. Additionally, participants reported that they needed more hands-on practice for skills that were more complex or that were completely unfamiliar to them. One participant echoed the statements of many others when he said, "It's kind of hard to put what you read into practice without actually doing it hands on." Another participant in the self-directed training program reported, "The handouts and literature are fine, but to actually touch it [the field medical equipment] and make some mistakes and get it right. . . that's how I tend to learn and retain things better--just actually setting some time aside to do it."

Train Using Realistic Field Conditions

Trainers and participants reported that training in field skills and functions must replicate conditions they would encounter when providing patient care in a deployed or field status. Some trainers who had experience providing patient care in a field environment developed realistic scenarios that they used to train some of the skills and functions so that the training would be more interesting and challenging. Also, participants reported that it was helpful to train with realistic training aids, such as mannequins, and with the actual equipment and supplies they would use in a deployed or field status.

Maintain Mission Essential Equipment and Supplies

To conduct training using realistic field conditions, trainers and participants emphasized that they needed access to mission-capable field medical equipment, equipment parts, and expendable supplies they would use in a deployed or field status. As one participant stated, "You've got to have all the parts to know how to set up the parts." This means that equipment operators and maintenance personnel must maintain the equipment in an operational state of readiness for use in patient-care situations consistent with the current mission of the unit.

Train to Challenge

Army training guidance states that leaders must ensure that training in clinical skills and functions is mentally challenging and is as close to field conditions as possible. When participants felt they were presented with challenging, realistic training on patient care skills and functions they would be expected to perform in a field environment, they were excited and motivated to learn. Those who became more proficient in the skills and functions being trained gained confidence in their own ability to provide patient care in a field environment.

Train to Sustain Proficiency

According to Army training guidance, once personnel have mastered a group of tasks identified as critical to the unit's mission, a method of sustaining their task proficiencies needs to be incorporated into the unit training plan. Refresher or sustainment training is "used to reinforce previous training and/or sustain/regain previously acquired skills and knowledge. The training is related to course-specific training objectives, performed under prescribed conditions, and must meet prescribed performance standards" (TRADOC Reg 350-70, 1995, p. Glossary-23).

Trainers as well as study participants reported that nursing personnel in a unit fluctuate in their ability to perform critical skills and functions because of several factors, including training frequency, personnel turnover, new equipment fielding, and training resource constraints. Army training guidance states that leaders should plan their yearly sustainment training so that the unit's level of proficiency in the selected skills and functions can be maintained in a band of excellence (FM 25-101, 1990). That is, training in critical skills and

functions should be repeated at the minimum frequency necessary for sustainment, but frequently enough to prevent deep valleys in proficiencies.

Participants reported that they used opportunity training, sometimes referred to as hip pocket training, for sustainment training. This type of training is preselected, preplanned, and rehearsed, but is not conducted until unexpected training time becomes available (FM 25-101, 1990). Some participants reported using opportunity training during slow times in field exercises or when scheduled training was completed early. However, they also reported that this type of training was not well received by unit personnel when training in field skills was not perceived as a priority in the unit.

DISCUSSION

Findings of this study are consistent with previous competency based studies indicating that nursing personnel in the active and reserve components of the AMEDD do not have the opportunity in their peacetime work environment to practice and become proficient in many of the skills and functions they must perform in a deployed or field status (Zadinsky, 1997). During their pretest sessions, participants in this study generally had the most difficulty performing skills that were most different from skills they typically performed in their everyday fixed facility roles. Many participants also had difficulties answering questions on the written exercise. They reported that the command and control and medical evacuation battle focused functions assessed in this exercise were very different from these types of functions they performed in their peacetime roles.

The first goal of the training program implemented at the six study sites was to develop the competencies of nursing personnel in clinical skills they perform frequently or perform as lifesaving measures in a field environment, but do not routinely perform in fixed healthcare facilities. In spite of difficulties implementing the training program in accordance with critical training principles, this goal was met with at least partial success. There was a pattern of significant post-training improvement in percent scores on the competency based exercise for all study sites. Moreover, greater improvement in the post-training competency based exercise scores was associated with more structure to the training program. Additionally, participants who committed time and effort to the training program and showed a significant improvement in their post-training scores were excited about the training and reported that they felt more confident in their ability to provide patient care in a field environment.

The second goal of the training program was to develop the proficiencies of nursing personnel in battle focused functions, which were defined as actions performed by nursing personnel in support of patient care or unit management in a field environment. This goal was met with partial success. At five of the six study sites, there was a pattern of significant post-training improvement in percent scores on the written exercise, which measured participants' knowledge of the battle focused functions that were trained. At the site with no significant post-training improvement in the written exercise, most participants did not use their self-study packets to study the battle focused functions.

Participants at all sites had higher posttest scores and showed more improvement in the competency based exercise than in the written exercise. This finding is consistent with many participants' reports that they did not have a good understanding of the battle focused functions after the training program because they did not attend the training classes or did not have adequate training in these functions. The training program implemented at the six sites included a total of 28 skills for nursing personnel with six different AOCs/MOSs, but only three battle focused functions for all personnel. Units put more resources into training the skills as opposed to the three functions included in the training program. Perhaps nursing personnel are more comfortable with training patient care skills as opposed to battle focused functions and therefore more work needs to be done to help nursing personnel learn to train these functions.

However, it is important to note that a general pattern of post-training score improvement and positive comments from participants, especially regarding the training in field skills, was noted in spite of difficulties implementing the training program in accordance with critical

training principles. Additionally, training distractors in the form of other personal and unit responsibilities associated with participants' everyday roles were present at all study sites. In some cases, other unit responsibilities prevented participants from committing more of their time and attention to the training program. For example, the necessity of preparing to deploy with their unit prevented many participants at the combat support hospital site from completing the entire training program. In other cases, participants did not commit more time and attention to the training program because of various personal responsibilities. For example, some participants reported that they did not study their assigned skills and functions because they had more urgent and important responsibilities, to include their own self-development for their fixed facility roles.

In order for units to more completely meet the goals of the training program, there must be command emphasis on training nursing personnel as outlined in the *Readiness Training Program*. Furthermore, findings indicate that these goals are more likely to be met when units follow the guidelines outlined for management of this training program and conduct their training according to the training principles identified as critical to the success of this program. That is, if nursing personnel are to be prepared to provide patient care in a deployed or field status, units cannot continue to be content with familiarizing nursing personnel with these skills and functions as time and resources allow. Instead, a more vigorous approach to training as outlined in the *Readiness Training Program* must be adopted.

CONCLUSIONS

Institutional training, operational assignments, and self development activities help nursing personnel develop a general knowledge base of both the basic skills and functions of their AOC or MOS and also the professional aspects of their nursing practice. The *Readiness Training Program for Nursing Personnel in the AMEDD* can be used to help nursing personnel build on this general knowledge base. Findings of this study indicate that this training program can be used as an effective means of helping nursing personnel in the active and reserve components of the AMEDD improve their proficiencies in skills and functions that they perform frequently or perform as life saving measures in a field environment, but that they do not routinely perform in the same manner in fixed facilities.

More specifically, the *Readiness Training Program* can be used to help nursing personnel improve their proficiencies in skills that are performed in a field environment (a) with field medical equipment, (b) without automated equipment or special support services, and (c) in an expanded role. The *Readiness Training Program* also can be used to help nursing personnel develop their knowledge of the following categories of battle focused functions performed in a field environment: (a) command and control, (b) medical evacuation, (c) medical supply, (d) infection control, and (e) sustainment functions. The *Readiness Training Program* can be used with medical surgical nurses, operating room nurses, nurse anesthetists, practical nurses, medical specialists, and operating room specialists in a variety of settings in both the active and reserve components of the AMEDD.

In order for the *Readiness Training Program* to be successfully implemented, unit leaders must make resources, including time and personnel, available for training. The management

of training outlined in the training program must be followed, and training in all settings must be consistent with training guidance in Army publications. Moreover, leaders must be made responsible for implementing challenging, performance-oriented training using realistic field conditions, appropriate equipment and supplies, and adequately trained trainers. Once nursing personnel in a unit become proficient in the skills and functions selected for training, plans must be made for training to sustain these proficiencies.

RECOMMENDATIONS

First, it is recommended that the readiness training program outlined in this study be accepted as the *Readiness Training Program for Nursing Personnel in the AMEDD* and be implemented for all nursing personnel in the active and reserve components of the AMEDD. It is recommended that the Chief Nurse, U.S. Army Forces Command, and the Chief, Department of Nursing Science, AMEDDC&S, share the responsibility of institutionalizing the *Readiness Training Program* throughout the active and reserve components of the AMEDD. An officer at each Regional Medical Command should be designated to coordinate readiness training for all units in their region, and the *Readiness Training Program* should be an integral part of this training. The training status of the individual medical readiness of each of these units should be included in their Unit Status Report.

Furthermore, it is recommended that a Training Support Package be developed to help implement the *Readiness Training Program*. This Training Support Package should include a description of the background and goals of the program, an explanation of training principles critical to the success of the training program, an explanation of training management, specific guidance for implementing the program at the unit level, and detailed task summaries for clinical skills and battle focused functions that are ready to be used in a unit's training program. The Training Support Package should be made available to all nursing personnel in the active and reserve components of the AMEDD.

Finally, it is recommended that a readiness training program be developed for other groups of personnel in the AMEDD, to include Medical Corps officers. Training needs should be identified for these personnel in the active and reserve components of the AMEDD. Training

programs should be developed based on these needs, and the effectiveness of the training programs should be evaluated before institutionalizing them throughout the AMEDD.

APPENDIX A

READINESS TRAINING PROGRAM DEMOGRAPHIC QUESTIONNAIRE

For each question, circle all of the correct numbered response(s) or write in your response. If your response is zero, write in "0." Do not leave any blanks.

A. SITE _____

B. DATE _____

C. ID _ _ _ _ _

D. TIME IN _____

TIME OUT _____

E. MILITARY STATUS:

1. Active Duty Army
2. ARNG
3. USAR

F. MOS/AOC:

1. 91B (Medical Specialist) 10 20 30 40 50
2. 91C (Practical Nurse) 10 20 30 40 50
3. 91D (OR Specialist) 10 20 30 40 50
4. 66A (Nurse Administrator)
5. 66B (Community Health Nurse)
6. 66C (Psychiatric/Mental Health Nurse)
7. 66D (Pediatric Nurse)
8. 66E (Operating Room Nurse)
9. 66F (Nurse Anesthetist)
10. 66G (Obstetric and Gynecologic Nurse)
11. 66H (Medical-Surgical Nurse)
12. 66J (Clinical Nurse)

G. What is your present grade?

- | | | | |
|-------|-------|--------|--------|
| 1. E1 | 5. E5 | 9. E9 | 14. 04 |
| 2. E2 | 6. E6 | 11. 01 | 15. 05 |
| 3. E3 | 7. E7 | 12. 02 | 16. 06 |
| 4. E4 | 8. E8 | 13. 03 | |

H. What is your gender?

1. Male
2. Female

I. What is your age?

I am ____ years ____ months of age.

J. How long have you served in the **reserve component** (ARNG and/or USAR) of the Army Medical Department?

____ years ____ months

K. How long have you served on **active duty** in the Army Medical Department?

____ years ____ months

L. How much of your active duty service has been with a TOE (field) unit?

____ years ____ months

M. How many **months** have you spent providing patient care in a deployed status **since January 1990**?

____ months

N. How many **months** have you spent providing patient care during a field training exercise (FTX) **since January 1990**?

____ months

O. How many **days** have you spent in hands-on training with field medical equipment **in the last 12 months?**

_____ days

P. **For Active Duty Officer and Enlisted Personnel:** Are you a part of the Professional Officer Filler System (PROFIS) or Medical Filler System (MEDFIS)? (If you are a student, were you on PROFIS/MEDFIS at your last duty station?)

1. Yes
2. No

Q. **For Active Duty Officer and Enlisted Personnel:** To what type of unit are you currently assigned? (If you are a student, your last assignment was at what type of unit?)

1. TDA
2. TOE

R. **For Officers:** What are your Additional Skill Identifiers (ASIs)?

1. 5K (Instructor)
2. 5N (Inspector General)
3. 5P (Parachutist/Airborne)
4. 7T (Clinical Nurse Specialist)
5. 7U (Field Nursing)
6. 7V (Nurse Recruiting)
7. 7Y (Combat Development)
8. 8A (Intensive Care)
9. 8C (Thoracic Cardiovascular Care)
10. 8D (Midwifery)
11. 8E (Nurse Practitioner)
12. 8J (Infection Control)
13. 8K (CMS)
14. Other (please specify) _____
15. I do not have any ASIs.

S. For Enlisted Personnel: What are your Additional Skill Identifiers (ASIs)?

1. M3 (Dialysis Specialty)
2. P1 (Orthopedic Specialty)
3. P2 (ENT Specialty)
4. P3 (Eye Specialty)
5. P5 (Master Fitness Trainer)
6. Y6 (Cardiac Catheterization Specialty)
7. 2S (Battle Staff Operations)
8. Other (please specify) _____
9. I do not have any ASIs.

T. For Enlisted Personnel: What are your Special Qualification Identifiers (SQIs)?

1. C (NBC)
2. F (Flying Status)
3. G (Ranger)
4. H (Instructor)
5. M (First Sergeant)
6. P (Parachutist)
7. Q (Equal Opportunity Advisor)
8. V (Ranger Parachutist)
9. X (Drill Sergeant)
10. Z (Alcohol & Drug Abuse Prevention & Control Program)
11. 4 (Non-Career Recruiter)
12. Other (please specify) _____
13. I do not have any SQIs.

U. What is your CURRENT POSITION in the military? (If you are assigned as a student now, what was your position in your last assignment?)

1. Air Ambulance/Evacuation Position (Air Ambulance/Evacuation NCO; Ambulance Driver/Aide; etc.)
2. Chief Nurse/Director of Nursing/Chief Wardmaster
3. Clinical Nurse Specialist (specify area of practice) _____
4. Detachment Sergeant
5. Drill Sergeant
6. Emergency Medical Technician
7. First Sergeant
8. Head Nurse
9. Instructor or Training Position
10. Licensed Practical Nurse
11. Medical NCO/NCOIC/Wardmaster
12. Nurse Anesthetist
13. Nurse Assistant/Nurse Aide/Medical Specialist
14. Nurse Midwife
15. Nurse Practitioner, Adult
16. Nurse Practitioner, Family
17. Nurse Practitioner, OB/GYN
18. Nurse Practitioner, Pediatrics
19. Operating Room Specialist
20. Other Specialist (please specify) _____
21. Operations Sergeant
22. Platoon Sergeant
23. Recruiter
24. Researcher
25. Section Supervisor/Section NCO
26. Squad Leader
27. Staff Nurse
28. Staff Officer (specify area of practice) _____
29. Training NCO
30. Other (please specify) _____

V. What is your CURRENT AREA OF PRACTICE in the military? (If you are assigned as a student now, what was your area of practice in your last assignment?)

1. Administration/Research
2. Aeromedical Evacuation/Ground Evacuation/Ambulance
3. Ambulatory Care (Outpatient Clinic/Troop Medical Clinic/Aid Station)
4. Community Health/Home Health Care
5. Coronary Care Unit/Telemetry Unit
6. Emergency Room
7. Field Medic
8. Forward Medical Support (please specify) _____
9. Geriatrics/Nursing Home
10. Infection Control
11. Intensive Care Unit--Combined (ICU)
12. Intensive Care Unit--Medical (MICU)
13. Intensive Care Unit--Neonatal (NICU)
14. Intensive Care Unit--Surgical (SICU)
15. Medical-Surgical
16. Newborn Nursery
17. Nurse Anesthesia
18. Nursing Education & Staff Development/Instructing or Training in any Specialty Area
19. Obstetrics/Gynecology
20. Operating Room/CMS
21. Orthopedics
22. Pediatrics
23. Plans, Training, Mobilization & Security
24. Post Anesthesia Care Unit (Recovery Room)
25. Psychiatric/Mental Health
26. Quality Assurance/Risk Management
27. Recruiting
28. Other (please specify) _____

W. In which of the following military and/or civilian AREAS OF PRACTICE have you ever worked? Include your work in any position in an in-patient or an out-patient setting.

1. Administration/Research
2. Aeromedical Evacuation/Ground Evacuation/Ambulance
3. Ambulatory Care (Outpatient Clinic/Troop Medical Clinic/Aid Station)
4. Community Health/Home Health Care
5. Coronary Care Unit/Telemetry Unit
6. Emergency Room
7. Field Medic
8. Forward Medical Support (please specify) _____
9. Geriatrics/Nursing Home
10. Infection Control
11. Intensive Care Unit--Combined (ICU)
12. Intensive Care Unit--Medical (MICU)
13. Intensive Care Unit--Neonatal (NICU)
14. Intensive Care Unit--Surgical (SICU)
15. Medical-Surgical
16. Newborn Nursery
17. Nurse Anesthesia
18. Nursing Education & Staff Development/Instructing or Training in any Specialty Area
19. Obstetrics/Gynecology
20. Operating Room/CMS
21. Orthopedics
22. Pediatrics
23. Plans, Training, Mobilization & Security
24. Post Anesthesia Care Unit (Recovery Room)
25. Psychiatric/Mental Health
26. Quality Assurance/Risk Management
27. Recruiting
28. Other (please specify) _____

X. How long have you worked in each of the following clinical areas of practice?
Include your work in any position in an in-patient or an out-patient setting.

1. ____ years ____ months in Community Health/Home Health Care
2. ____ years ____ months in Coronary Care Unit/Telemetry
3. ____ years ____ months in Emergency Room
4. ____ years ____ months in Geriatrics/Nursing Home
5. ____ years ____ months in Intensive Care (Medical, Surgical, Pediatric, Neonatal etc.)
6. ____ years ____ months in Medical-Surgical Nursing
7. ____ years ____ months in Newborn Nursery/Pediatrics
8. ____ years ____ months in Obstetrics/Gynecology
9. ____ years ____ months in Operating Room/CMS
10. ____ years ____ months in Orthopedics
11. ____ years ____ months in Post Anesthesia Care Unit (Recovery Room)
12. ____ years ____ months in Mental Health/Psychiatric Nursing

Y. What certifications do you currently hold?

1. Certified Critical Care Nurse (CCRN)
2. Certified Emergency Nurse (CEN)
3. Certified Medical-Surgical Nurse (RN,C)
4. Certified Nurse, Operating Room (CNOR)
5. Certified Nurse, Orthopedics (ONC)
6. Certified Nurse Practitioner (specify area) _____
7. Certified Registered Nurse Anesthetist (CRNA)
8. Emergency Medical Technician - Basic (Ambulance)
9. Emergency Medical Technician - Intermediate
10. Emergency Medical Technician - Paramedic
11. Other (please specify) _____
12. I do not have any certifications.

Z. What professional licenses do you hold?

1. LPN/LVN
2. Registered Nurse
3. Nurse Practitioner
4. Other (please specify) _____
5. I do not have any professional licenses.

AA. What was your entry level diploma/degree into nursing as a Registered Nurse (R.N.)?

1. Graduate of Nursing Diploma Program
2. Associate Degree in Nursing
3. Bachelor of Science Degree in Nursing
4. Master's Degree in Nursing

AB. What year did you graduate from your entry level R.N. diploma or degree program?

AC. What diplomas and/or academic degrees have you earned?

1. Graduate of Nursing Diploma Program
2. Associate Degree in Nursing
3. Associate Degree in a non-nursing field
4. Bachelor of Science Degree in Nursing
5. Bachelor's Degree in a non-nursing field
6. Master's Degree in Nursing
7. Master's Degree in a non-nursing field
8. Doctorate in Nursing
9. Doctorate in a non-nursing field
10. I have taken some college courses, but I have not earned a degree.
11. I have not taken any college courses.

AD. What military academic courses have you completed?

1. PLDC
2. BNCOC
3. ANCOC
4. First Sergeants Course
5. Battle Staff Non-Commissioned Officers Course (BSNCOC)
6. Sergeants Major Academy
7. Officer Basic Course
8. Officer Advanced Course
9. Head Nurse Course
10. PANA Course
11. AMEDD S2/S3 Course
12. AMEDD Pre-Command Course
13. Combined Arms and Services Staff School (CAS3) - Phase I
14. Combined Arms and Services Staff School (CAS3) - Phase II
15. Command & General Staff Officer Course (CGSOC)
16. Armed Forces Staff College
17. Industrial College of the Armed Forces
18. War College
19. Other (please specify) _____
20. I have not completed any military academic courses.

AE. What military or civilian medical education courses have you completed?

1. Advanced Burn Life Support (ABLS)
2. Advanced Cardiac Life Support (ACLS)
3. Advanced Trauma Life Support (ATLS)
4. Basic Trauma Life Support (BTLS)
5. Combat Anesthesia Course (CA)
6. Combat Casualty Care Course (C4)
7. Combat Casualty Care Management Course (C4A)
8. Combat Trauma Nurse Course (CTNC)
9. Deployment Medicine Course (DMC)
10. Emergency Medical Technician Training - Basic (Ambulance)
11. Emergency Medical Technician Training - Intermediate
12. Emergency Medical Technician Training - Paramedic
13. Medical Defense Against Biological Warfare & Infectious Disease
14. Medical Effects of Nuclear Weapons
15. Medical Management of Chemical Casualties
16. Neonatal Advanced Life Support (NALS)
17. Nuclear Hazards Training Course
18. Pediatric Advanced Life Support (PALS)
19. Pre-Hospital Trauma Life Support (PHTLS)
20. Trauma Nurse Core Course (TNCC)
21. Other (please specify) _____
22. I have not completed any military or civilian medical education courses.

**CONTINUE WITH THE REST OF THE QUESTIONNAIRE
ONLY IF YOU ARE ARNG OR USAR PERSONNEL**

AF. How many days of training for your nursing role in the ARNG or USAR have you had in the last year? Training may include classes, practical exercises, patient play scenarios, hands-on training with field medical equipment, and/or other classroom-type experiences related to your clinical nursing role.

_____ days in the last year

AG. How many days of patient care in your ARNG or USAR nursing role have you had in the last year?

_____ days in the last year

AH. In your **civilian** place of employment, do you work in a nursing role?

1. Yes
2. No

AI. If yes, is this nursing role in your **civilian** place of employment the same as your nursing role in the ARNG or USAR?

1. Yes
2. No

AJ. If you do not work in a nursing role in your civilian place of employment, what is your current **position** and **place of employment**? _____

AK. If you work in a nursing role in your **civilian** place of employment, what is your current position?

1. Chief Nurse/Director of Nursing
2. Clinical Nurse Specialist (specify area of practice) _____
3. Emergency Medical Technician
4. Head Nurse
5. Instructor/Professor/Nursing Education or Training Position
6. Licensed Practical Nurse
7. Medical NCO/NCOIC/Wardmaster
8. Nurse Anesthetist
9. Nurse Assistant/Nurse Aide/Medical Specialist
10. Nurse Midwife
11. Nurse Practitioner, Adult
12. Nurse Practitioner, Family
13. Nurse Practitioner, OB/GYN
14. Nurse Practitioner, Pediatrics
15. Operating Room Specialist
16. Other Specialist (please specify) _____
17. Researcher
18. Section Supervisor
19. Staff Nurse
20. Staff Officer (please specify) _____
21. Other (please specify) _____
22. I do not work in a nursing role in my civilian place of employment.

AL. If you work in a nursing role in your **civilian** place of employment, what is your area of practice?

1. Administration/Research
2. Ambulatory Care (Outpatient Clinic)
3. Community Health/Home Health Care
4. Coronary Care Unit/Telemetry Unit
5. Emergency Room
6. Geriatrics/Nursing Home
7. Infection Control
8. Intensive Care Unit--Combined (ICU)
9. Intensive Care Unit--Medical (MICU)
10. Intensive Care Unit--Neonatal (NICU)
11. Intensive Care Unit--Surgical (SICU)
12. Medical-Surgical
13. Newborn Nursery
14. Nurse Anesthesia
15. Nursing Education & Staff Development/Training
16. Obstetrics/Gynecology
17. Operating Room/CMS
18. Orthopedics
19. Pediatrics
20. Post Anesthesia Care Unit (Recovery Room)
21. Psychiatric/Mental Health
22. Quality Assurance/Risk Management
23. Other (please specify) _____
24. I do not work in a nursing role in my civilian place of employment.

APPENDIX B

LIST OF SKILLS SELECTED FOR TESTING

SKILL	AOC/MOS					
	66H	66E	66F	91B	91C	91D
<u>Skills Performed Using Field Medical Equipment</u>						
1.01: Operate a cardiac monitor-recorder	X	X	X	X	X	
1.02: Obtain a 12-Lead EKG	X			X	X	
1.03: Operate a field portable oropharyngeal suction apparatus	X		X	X	X	
1.04: Operate a surgical suction apparatus	X	X		X	X	
1.05: Operate a field oxygen delivery system	X			X	X	
1.06: Operate a ventilator	X		X		X	
1.07: Operate a mobile ultrasonic cleaner		X				X
1.08: Operate a field sterilizer		X				X
1.09: Operate a field operating table		X				X
1.10: Operate an electrosurgical apparatus		X				X
1.11: Operate an intermittent suction-aspirator system		X				X
1.12: Operate a pulsed irrigation and suction system		X				X
1.13: Set up a blood recovery and delivery system			X			X
1.14: Operate a blood recovery and delivery system			X			
1.15: Operate an 885A field anesthesia apparatus			X			
1.16: Operate a universal PAC draw-over anesthesia apparatus			X			

SKILL	AOC/MOS					
	66H	66E	66F	91B	91C	91D
<u>Skills Performed Without Automated Equipment or Specialized Support Services</u>						
2.01: Measure CVP using a water manometer system	X		X			
2.02: Measure a patient's oral temperature	X			X	X	
2.03: Measure a patient's blood pressure	X			X	X	
2.04: Prepare an IV additive	X	X			X	
2.05: Calculate an oral medication dosage	X			X	X	
2.06: Calculate the flow rate for an IV infusion	X	X		X	X	
2.07: Prepare sterile items for storage		X				X
2.08: Perform high level disinfection		X				X

Skills Performed in an Expanded Role in the Field

3.01: Triage casualties	X			X		
3.02: Intubate a patient*				X		
3.03: Perform a needle chest decompression*				X		
3.04: Treat a hemorrhaging patient				X		
3.05: Administer blood to a patient				X	X	
3.06: Set up Buck's unilateral leg traction	X			X	X	
3.07: Manage peritoneal dialysis	X					

* The expert panel selected these advanced clinical skills for testing only those medical specialists (91Bs) with a skill level equal to or greater than 20. It was expected that these more senior medical specialists would have completed the Basic Noncommissioned Officers Course (BNCOC), where they learn more advanced clinical skills.

APPENDIX C

Readiness Competency of Nursing Personnel During Deployment Competency Based Exercise

GO	NO GO
----	----------

TASK 101 *Triage Casualties (66H, 91B)*

Conditions: Picture of treatment facility & written description of each casualty with a prompt to respond with triage category, rationale, and treatment steps. **Time:** 9 min.

"You are the triage officer. A 5-ton truck just arrived with 12 casualties. The only medical personnel available are 1 general medical officer, 1 general surgeon, and a few nursing personnel. You are the first medical providers to see these casualties. Assign 1 or more possible triage categories to each of the 4 casualties and explain why you chose each category. Describe the steps in treating each of the casualties. Use the picture of the treatment facility to identify areas of treatment."

1. Casualty 1.
2. Casualty 2.
3. Casualty 3.
4. Casualty 4.

- 1.
- 2.
- 3.
- 4.

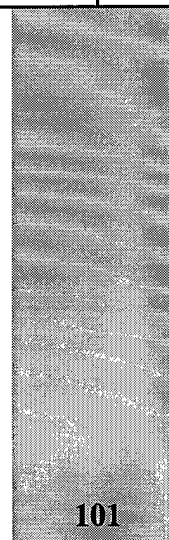
TASK 102 *Intubate a Patient* (NOTE: ADMINISTER to 91B20/30/40/50 ONLY)

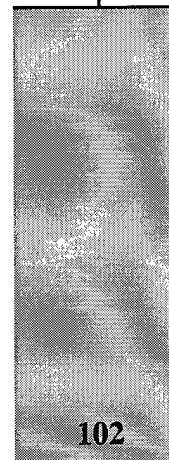
Conditions: 1 laryngoscope with 1 straight and 1 curved blade, 1 stylet, 1 each of 6, 7, & 8 mm ET tubes in sterile wrappers, 10-20 cc syringe in sterile wrapper, 1 roll of adhesive tape, & 1 spray can of lubricant that can be used to intubate the mannequin; intubation mannequin positioned on bed for easy intubation. **Time:** 5 min.

"This 27-year-old patient is not breathing, but his airway is patent. He is being oxygenated with a bag-valve-mask. Prepare your equipment and intubate this mannequin."

1. Lock blade in place & check light.
2. Select 7 or 8 mm ET tube.
3. Check ET tube cuff by inflating with 10 cc of air.

- 1.
- 2.
- 3.





Readiness Competency of Nursing Personnel During Deployment Competency Based Exercise		GO	NO GO
4. Insert stylet into ET tube so that tip is recessed ½ inch from ET tube tip & bend other end of stylet at a 90° angle so it can go no further into ET tube.	4.		
5. Lubricate tube prior to intubation.	5.		
6. Insert blade to visualize vocal cords.	6.		
7. Insert ET tube until cuff is just below level of vocal cords.	7.		
8. Remove blade & stylet.	8.		
"When you place an ambu bag over the end of the ET tube and blow air into the tube, how would you know if the tube is in place?"			
9. Verbalize that chest should rise symmetrically or lung sounds should be auscultated bilaterally.	9.		
"What would you do to keep the ET tube in place?"			
10. Inflate cuff & secure with tape.	10.		
TASK 103 <i>Perform a Needle Chest Decompression</i> (NOTE: ADMINISTER to 91B20/30/40/50 ONLY)			
Conditions: 1 each of a 14 & 18 gauge angiocath in a sterile wrapper, a 20 cc syringe in a sterile wrapper, 1 box of sterile alcohol swabs, & 1 roll of adhesive tape on table; 1 mannequin (1/2 or full-body mannequin with chest landmarks visible) on bed. Time: 5 min.			
"This patient is unconscious. He has left chest trauma and severe respiratory distress with cyanosis. What are 2 signs that may indicate a tension pneumothorax?"			
Poor ventilation despite an open airway.			
Neck vein distention.			
Tracheal deviation (away from side of injury).	1.		
Absent/decreased breath sounds on side of injury.			
Hyperresonance (tympany) to percussion on affected side.	2.		
"You have ventilated the patient with high-flow oxygen. Use this mannequin to show me how you would treat a patient with a tension pneumothorax."			

Readiness Competency of Nursing Personnel During Deployment Competency Based Exercise		GO	NO GO
3. Choose insertion site: Either the 2nd ICS in the midclavicular line (approximately in line with the nipple) or the 4th or 5th ICS in the midaxillary line on the same side as the pneumothorax.	3.		
4. Clean insertion site with sterile alcohol wipe.	4.		
5. Choose 14 gauge needle & attach syringe.	5.		
6. Demonstrate how to insert needle tip, bevel up, just above rib margin.	6.		
7. Demonstrate how to decompress affected side by aspirating air with syringe to relieve patient's symptoms.	7.		
8. Verbalize how to initiate closed chest drainage with underwater seal or how to apply commercial or improvised one-way flutter valve.	8.		
9. Verbalize need to secure needle to chest.	9.		
"How do you know when you have inserted the needle far enough (penetrated the pleura)?"			
10. "I have inserted the needle far enough when I feel a 'pop' as the needle enters the pleural space."	10.		
TASK 104 <i>Treat a Hemorrhaging Patient (91B)</i>			
Conditions: 2 field dressings, 2 field bandages, & 3 tongue blades on table; 1 full-body mannequin with wound marked on lower forearm, just below elbow joint. Time: 4 min.			
"You are working as a field medic during a field training exercise. This soldier has a wound on the left lower arm that is bleeding profusely. Show me what steps you would take to treat the soldier whose wound continues to hemorrhage." (At completion of #1, #2, & #3--may use prompt, "The wound continues to hemorrhage.")			
1. Demonstrate applying & securing pressure dressing.	1.		
2. Demonstrate elevating arm above level of heart. (May demonstrate either #1 or #2 first.)	2.		

Readiness Competency of Nursing Personnel During Deployment Competency Based Exercise		GO	NO GO
3. Demonstrate applying digital pressure to arterial pressure point at elbow.	3.		
4. Demonstrate and explain application of tourniquet using field bandage (when previous measures do not control hemorrhage):			
a. Use correct location, applying tourniquet between wound & heart--about 2" above wound site & above joint.	4.		
5. b. Use tongue blades to apply appropriate tightness.	5.		
6. c. Verbalize need to mark T on forehead.	6.		
7. d. Verbalize need to mark time of initiation on forehead or on Field Medical Card.	7.		

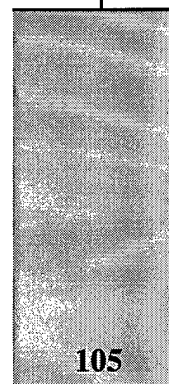
TASK 105 *Administer Blood to a Patient (91B, 91C)*

Conditions: 1 labeled blood pack with red fluid in bag to simulate blood, 1 SF 518 completed with patient information, 1 blood recipient set, & 1 liter of IV solution other than normal saline on table; an IV pole. **Time:** 6 min.

"You have just received a unit of blood that is to be administered to a patient. Show me what you would do to evaluate the blood pack and the patient before administering the unit of blood."

- | | | | |
|---|----|--|--|
| 1. Together with an RN (if RN available), verify blood pack label with requisition form data. | 1. | | |
| 2. Verify blood pack label with patient's name, blood type, & ID. | 2. | | |
| 3. Inspect blood for abnormalities. | 3. | | |
| 4. Evaluate patient's allergies, previous reactions to blood products, & vital signs. | 4. | | |

"Show me how you would set up the unit of blood to administer it to a patient."

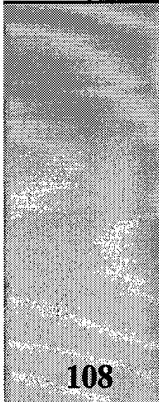
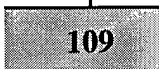



105



Readiness Competency of Nursing Personnel During Deployment Competency Based Exercise		GO	NO GO
5. Prime blood line & infusion tubing with normal saline, using sterile technique. (May prompt, "What type of IV fluid would you use for IV flush?")	5.		
6. Administer blood with a 16-19 gauge catheter. (May prompt, "What gauge of IV catheter would you use to administer the blood?")	6.		
"What would you monitor and observe the patient for while administering the blood transfusion?"			
7. Monitor vital signs and observe for indication of adverse reaction to blood transfusion.	7.		
"What would you do when the patient has received the unit of blood?"			
8. Flush line with normal saline, take patient's vital signs, & document on SF 518.	8.		
"Name 1 sign or symptom of an adverse reaction to a blood transfusion."			
9. Fever, chills, hypotension, tachycardia, flushed appearance, headache, nausea, anxiety, etc.	9.		
"What is the first action you should take if your patient shows signs of an adverse reaction to the blood?"			
10. Stop the transfusion.	10.		
TASK 106 <i>Set Up Buck's Unilateral Leg Traction (66H, 91B, 91C)</i>			
Conditions: Soft padding, moleskin, ace wrap, traction cord, approximately 3"x3"x3/4" board, & stockinette on table; IV pole; full-body mannequin (with legs & feet) on bed. Time: 4 min.			
"Use this mannequin and these materials to show me how you would set up Buck's traction on the right leg. Demonstrate how you would set up the traction and how you would assess the leg."			
1. Pad bony prominences of lower leg.	1.		

Readiness Competency of Nursing Personnel During Deployment Competency Based Exercise		GO	NO GO
2. Attach moleskin medially & laterally (min. 30") & extend it 2-3" past end of foot. Wrap elastic bandage over moleskin.	2.		
3. Secure wooden block inside of moleskin.	3.		
4. Develop method of setting up traction cord (e.g., drill hole through wooden block or tie cord around it).	4.		
5. Develop method of stabilizing traction (e.g., string it over IV pole).	5.		
6. Apply weight (e.g., sand-filled stockinette or MRE bag).	6.		
7. Raise heel off of bed.	7.		
8. Assess alignment of extremity.	8.		
9. Assess neurovascular status & skin of affected leg.	9.		
TASK 107 <i>Manage Peritoneal Dialysis (66H)</i>			
Conditions: A 1-liter bag of IV fluid with label "peritoneal dialysate" on bag & IV tubing on table; 1 empty IV bag with opening positioned on mannequin to simulate a peritoneal catheter; an IV pole.			
Time: 5 min.			
"What would you do to prepare the patient for peritoneal dialysis?"			107
1. Verbalize need to empty patient's bladder & obtain vital signs.	1.		
"What kind of aseptic technique would you use when assisting the physician to insert the peritoneal catheter?"			
2. Glove, gown, and mask.	2.		
"Here is the peritoneal catheter that has just been inserted. You are to manage the peritoneal dialysis. The order is to use 1 liter of this peritoneal dialysate and to let it dwell in the peritoneal cavity for 2 hours. Explain all that you would do with the patient--being sure to show how you would infuse the dialysate."			
3. Verbalize need to warm dialysate and prime tubing.	3.		

Readiness Competency of Nursing Personnel During Deployment Competency Based Exercise		GO	NO GO
4. Demonstrate method of infusing peritoneal dialysate.	4.		
5. Verbalize need to monitor patient's vital signs during procedure.	5.		
6. Demonstrate method of removing peritoneal dialysate & assessing fluid.	6.		
7. Verbalize need to calculate fluid balance volume.	7.		
TASK 108- Assemble a Water Manometer System & Measure CVP (66H, 66F)			
Conditions: CVP manometer that is not assembled, a 1 liter bag of IV fluid with IV tubing connected, & 1 small basin on table; IV pole; 1 full-body mannequin (with arms) on bed. Time: 4 min.			
"Assemble and position a water manometer system for measuring the CVP from a central venous catheter. Flush the IV fluid path."			
1. Adjust manometer so 0 mark is level with patient's atrium (mid-axillary line). (May prompt, "Why are you positioning the manometer there?")	1.		
2. Connect manometer between IV bag & patient.	2.		
3. Flush IV fluid path.	3.		
"Fill the manometer to 20 cm."			
4. Fill manometer to 20 cm mark.	4.		
"What will happen when the manometer fluid path is opened to the patient with a CVP of 10 and closed to the IV bag?"			
5. "The fluid will go to the 10 cm mark."	5.		

**Readiness Competency of Nursing Personnel During Deployment
Competency Based Exercise**

**TASK 110 *Operate a Cardiac Monitor/Recorder*
(66H, 66E, 66F, 91B, 91C)**

Conditions: Hewlett-Packard cardiac monitor/recorder (with a 5-lead electrode lead set stored in its compartment) connected to an electrical source; 4 metal plate limb electrodes with rubber straps, 1 suction cup electrode, 1 tube of electrolyte gel, 1 roll of recorder paper, & 1 box of alcohol swabs on table; 1 full-body mannequin (with arms & legs) on bed. **Time:** 4 min.

"Set up this cardiac monitor/recorder. Prepare the monitor to obtain an EKG tracing."

1. Turn machine on & connect lead cable.
2. Press lead select button for monitoring patient.

"Turn on the high and low alarms and set them to 50 & 120."

3.

"Use the mannequin to show me how and where you would place the electrodes."

4. Demonstrate correct placement of 1 arm & 1 leg electrode. Apply electrodes over fleshy areas--leg electrode on medial or lateral aspect of calf & arm electrode on inner aspect of arm or forearm.

5. Demonstrate correct use of alcohol swabs and/or electrolyte gel with the electrodes.

"Show me how to obtain a rhythm strip."

6. Push Run/Stop button while in Lead II.

TASK 111 *Obtain a 12-Lead EKG Using a Cardiac Monitor/Recorder* (66H, 91B, 91C)

Conditions: Hewlett-Packard cardiac monitor/recorder connected to an electrical source; 5-lead electrode lead set connected to monitor; 4 metal plate limb electrodes with rubber straps, 1 suction cup electrode, 1 tube of electrolyte gel, 1 roll of recorder paper, 1 box of alcohol swabs; 1 full-body mannequin (with arms & legs) on bed. **Time:** 4 min.

GO

NO
GO

110

1.

2.

3.

4.

5.

6.

**Readiness Competency of Nursing Personnel During Deployment
Competency Based Exercise**

"Use the mannequin to show me how to obtain a 12-lead EKG."

GO

NO
GO

111

1. Use Lead Select Switch to change EKG source between leads I, II, III, aVR, aVL, & aVF & run short strip in each position.

1.

2. Place Lead Select Switch in Lead V to run a short strip in each of the following V leads.

2.

3. Connect suction cup electrode to chest lead & position at V1: 4th ICS @ RSB.

3.

4. Position electrode at V2: 4th ICS @ LSB.

4.

5. Position electrode at V3: Halfway between V2 & V4.

5.

6. Position electrode at V4: 5th ICS @ L midclavicular line.

6.

7. Position electrode at V5: 5th ICS @ L anterior axillary line.

7.

8. Position electrode at V6: 5th ICS @ L midaxillary line.

8.

9. Label each section of EKG strip with appropriate V lead label.

9.

**TASK 112-
113 *Set Up & Operate a Field Portable Oropharyngeal
Suction Apparatus (66H, 66F, 91B, 91C)***

Conditions: 1 field portable oropharyngeal suction apparatus connected to an electrical source; suction tubing, suction catheter, & 1 small container of water on table. **Time:** 3 min.

"Set up the suction apparatus for use with electrical power. Set a maximum vacuum level of 100 mm Hg and suction water out of the container."

112-113

1. Attach all tubing.

1.

2. Turn mode selector switch to AC.

2.

3. Adjust the vacuum regulator to a maximum vacuum level of 100 mm Hg.

3.

Readiness Competency of Nursing Personnel During Deployment Competency Based Exercise			GO	NO GO
4. Attach suction catheter to tubing.	4.			
5. Suction water out of basin.	5.			
TASK 114- Set Up & Operate a Surgical Suction Apparatus 115 (66H, 66E, 91B, 91C)				
Conditions: 1 Gomco surgical suction apparatus with 2 drainage bottles; connecting tubing that is not assembled, 2 clamps, & 1 bottle of sterile water on table. Time: 6 min.				
"Set up the surgical suction apparatus and set the vacuum to 20 cm H₂O."				
1. Fill patient bottle with 2 cm sterile water or fill until tubes are submerged.	1.			
2. Connect suction apparatus tubing.	2.			
3. Turn suction machine on.	3.			
4. Pinch off patient's tube & adjust vacuum level.	4.			
"Show me how to change the drainage bottles while the patient's chest tube is still connected to the surgical suction apparatus."				
5. Turn suction machine off.	5.			
6. Place 2 clamps securely on tubing between patient and patient bottle.	6.			
7. Unscrew cap & remove bottle.	7.			
8. Place 2 cm water in new sterile bottle or fill until tubes are submerged.	8.			
9. Re-connect tubing, maintaining sterility.	9.			
10. Take off clamps & turn machine on.	10.			

**Readiness Competency of Nursing Personnel During Deployment
Competency Based Exercise**

TASK 116- Set up & Operate a Field Oxygen Delivery System
117 (66H, 91B, 91C)

Conditions: "H" oxygen cylinder in a secured position; pressure regulator with flowmeter & Christmas tree adapter to attach oxygen administration device, non-sparking wrench, & oxygen tubing with face mask on table. **Time:** 4 min.

"Assemble a system to deliver oxygen to a patient using these materials."

1. Attach pressure regulator to the cylinder.
2. Crack oxygen cylinder.
3. Attach oxygen administration device.

"Set the flow rate at 4 liters per minute."

4.

"How much remaining pressure is in the oxygen tank?"

5.

"At what pressure should you change the oxygen tank?"

6. 200-500 psi

"What is 1 safety procedure to follow when using the oxygen tank?"

7.

"Discontinue the oxygen and take off the pressure regulator."

8. Turn off the oxygen cylinder first and then bleed the regulator.

TASK 118- Set Up & Operate a Ventilator (66H, 66F, 91C)
119

Conditions: 1 Uni-Vent Model 750 & 1 PLV 100 or 102 ventilator with nearby electrical source. Required ventilator circuits, oxygen connecting tubing, oxygen regulator, and test lung on table. "H" oxygen cylinder in a secured position. All ventilator settings initially at 0--except high alarm at maximum setting. **Time:** 15 min.

GO	NO GO
----	-------

116

1.

2.

3.

117

4.

5.

6.

7.

8.

Readiness Competency of Nursing Personnel During Deployment Competency Based Exercise		GO	NO GO
"Would you like to set up the Uni-Vent (check GO column) or the PLV 100/102 (check NOGO column)?" (If no preference, set up Uni-Vent.)		118	
	0		
"Set up the ventilator using an electrical and gas source and the required circuits."			
1. Connect to gas and/or electrical source.	1.		
2. Connect circuits to ventilator.	2.		
"Calibrate the machine and perform a pressure check."			
3. Calibrate the machine.	3.		
4. Perform a pressure check.	4.		
"Explain how you would know if there are any leaks."			
5.	5.		
"Adjust the ventilator to IMV mode, FI_O₂ 100%, and a rate of 12 bpm."		119	
6. Mode IMV	6.		
7. FI _O ₂ 100%	7.		
8. Rate 12 bpm	8.		
<u>Uni-Vent:</u> "Set the flow adjust to 1000 & inspiratory time to 0.8 sec. to get a tidal volume of 800 ml."			
<u>PLV:</u> "Set the tidal volume to 800 ml & set the inspiratory flow rate between 40 & 60."			
9.	9.		
"Set the high & low pressure alarms 10 cm H₂O from the peak pressure."			
10.	10.		

**Readiness Competency of Nursing Personnel During Deployment
Competency Based Exercise**

GO

**NO
GO**

**TASK 120- Measure a Patient's Oral Temperature & BP
121 (66H, 91B, 91C)**

Conditions: 1 oral & 1 rectal thermometer in a small container designated for clean thermometers, 1 oral thermometer that can be used to test reading a thermometer, 1 small container designated for dirty thermometers, 1 box of sterile alcohol swabs, 1 adult BP cuff with sphygmomanometer, & 1 double stethoscope on table; 2 chairs.

Time: 6 min.

"Without putting this thermometer in your mouth, show me how you would take an oral temperature and how you would care for the thermometer between patient use."

120

1. Choose oral thermometer and shake thermometer to lower mercury below 96°F.

1.

2. Verbalize placing thermometer in heat pocket under tongue.

2.

3. Verbalize leaving thermometer in place with mouth firmly closed for at least 3 minutes.

3.

4. Read temperature in agreement with evaluator.

4.

5. Verbalize need to place in cleaning solution between patient use.

5.

"Take my BP using this equipment."

121

6. Position evaluator with arm palm up at approximately heart level and supported.

6.

7. Palpate for pulse & place cuff at brachial artery site (center of bladder directly over medial aspect of arm).

7.

8. Position stethoscope over brachial pulse site.

8.

9. Inflate cuff.

9.

10. State systolic BP as 1st distinct sound heard. (A tolerance of +/- 6 mm Hg is allowed.)

10.

**Readiness Competency of Nursing Personnel During Deployment
Competency Based Exercise**

GO

**NO
GO**

11. State diastolic BP as point at which sound changes--
i.e., becomes muffled or unclear.
(A tolerance of +/- 6 mm Hg is allowed.)

11.

TASK 122 *Prepare an IV Additive (66H, 66E, 91C)*

Conditions: Piggy-back IV bag, 5-10 cc syringe in sterile wrapping, 1 needle in sterile wrapping, 1 medication vial, medication labels, 1 box of sterile alcohol swabs, & 1 pencil on desk; 1 chair.

Time: 2 min. for 1st question & 3 min. for calculation question.

"Demonstrate how to prepare 2 ml of this medication to be given IV piggy-back."

1. Prepare medication, using sterile technique.
2. Clean injection port of sterile IV bag & inject medication into solution.
3. Attach medication label.
4. Gently mix medication with solution.

1.

2.

3.

4.

"Calculate the correct volume of an IV medication to give in the situation written here. Show your calculations."

5.

A patient needs 90 mg of gentamicin piggy-backed into the IV solution. You have gentamicin on hand in the strength of 40 mg per ml. What volume of gentamicin would you add to the solution that is to be piggy-backed into the intravenous infusion?

_____ ml

**Readiness Competency of Nursing Personnel During Deployment
Competency Based Exercise**

GO

NO
GO

TASK 123 *Calculate an Oral Medication Dosage (66H, 91B, 91C)*

Conditions: Written calculation exercise, pencil. **Time:** 3 min.

"Calculate the correct volume of an oral medication to give in the situation written here. Show your calculations."

123

1.

The physician has ordered Benadryl Elixir, 25 mg by mouth, for a patient. The Benadryl Elixir on hand contains 10 mg per ml. How many ml of the elixir would you give the patient?

_____ ml

TASK 124 *Calculate the Flow Rate for an IV Infusion (66H, 66E, 91B, 91C)*

Conditions: Written calculation exercise, pencil. **Time:** 3 min.

"Calculate the proper flow rate for the IV infusion in this problem. Show your calculations."

124

1.

A patient is to have 1 liter of IV fluid infused in 8 hours. The infusion set you are using administers 20 drops/ml. Calculate the drops per minute that the patient should receive.

_____ drops per minute

**Readiness Competency of Nursing Personnel During Deployment
Competency Based Exercise**

TASK 201 *Operate a Mobile Ultrasonic Cleaner (66E, 91D)*

Conditions: 1 mobile ultrasonic cleaner that is not filled with water, sonic cleaner, & 1 unwrapped minor tray. **Time:** 3 min.

"You have just received from the OR a grossly contaminated minor tray. Explain how to process the instruments for sterilization using the ultrasonic cleaner."

1. Remove gross contamination from instruments.
2. Add water to cover tray (minimum of 6").
3. Add sonic cleaner.
4. Set items in ultrasonic cleaner tray.
5. Set timer for 3-5 minutes to start.

"Explain how to drain the ultrasonic cleaner."

6. Explain 1 method of establishing a drainage waste line (with hose or bucket).

"What is 1 indication for changing the water in your ultrasonic cleaner?"

7. Gross contamination in water.
Cloudy, murky water.
Ultrasonic cleaner will sit without use for a prolonged period of time.

TASK 202-203 *Set Up & Operate a Field Sterilizer (66E, 91D)*

Conditions: 1 field sterilizer that is not in standing position, 1 field sterilizer that has been set up, & 1 minor tray wrapped in 2 double thickness wrappers. **Time:** 12 min.

"Explain how to stand up the field sterilizer for use."

1. Unlatch doors--one at a time--and swing into place.
2. Tighten the 2 "T" bars on the doors to anchor the door to the case.

GO

NO
GO

201

202

**Readiness Competency of Nursing Personnel During Deployment
Competency Based Exercise**

"Explain how to set up the sterilizer for use when power generators are available."

3. Close drain & establish drainage waste line (hose or bucket).

3.

4. Connect to electrical power.

4.

5. Remove plug from filling funnel. Fill the jacket with water through the funnel until the sight glass shows "full." Replace plug in funnel.

5.

6. Turn the operating valve to the "sterilize" or "dry" position before filling with water and turn to the "off" position after filling with water.

6.

"How do you ensure that conditions of sterility will be met when the sterilizer is first put in use or has just returned from medical maintenance for repair?"

7. "I perform a biological control or spore test."

7.

"The sterilizer has been turned off and allowed to cool down for cleaning. Explain how to prepare the sterilizer for use again."

8. Turn heat switch on & see that red pilot light glows.

8.

9. Preheat at least 10-15 min. Verify that a jacket pressure of 18 psi (15-20psi)/250°F or 29 psi (27-32 psi)/270°F is achieved.

9.

"This is a minor tray wrapped in two double thickness wrappers. Load the sterilizer with this tray."

10. Open door. Load sterilizer. Close & lock door.

10.

"The jacket pressure is 29 psi and the temperature is 270 °F. What other condition must be met before you start the timer?"

11. "The chamber pressure must be 29 psi."

11.


GO

NO
GO

203

GO	NO GO
----	----------

12.



13.

14.

15.

204




1.

2.

3.

4.



**Readiness Competency of Nursing Personnel During Deployment
Competency Based Exercise**

	GO	NO GO
5. Use dust covers & tape for sterile packages & change the expiration date to 30 days.	5.	
TASK 205 <i>Perform High Level Disinfection (66E, 91D)</i>		
Conditions: 1 soak pan & 1 bottle of Cidex on table. Time: 3 min.		
"High level disinfection would be appropriate for what items?"		
1. Give an example of a heat-sensitive item.	1.	
"Explain how to perform high level disinfection on a cystoscope that has just been used on a case and is grossly contaminated with organic debris."		
2. Clean with mild detergent to remove organic debris.	2.	
3. Label soak pan with date & time when disinfectant solution is mixed.	3.	
4. Soak in clean pan with disinfectant solution covering the cystoscope.	4.	
5. Rinse thoroughly in sterile basin using sterile distilled water and sterile gloves.	5.	
TASK 206- <i>Set Up & Adjust a Field Operating Table (66E, 91D)</i> 207		
Conditions: 1 field operating table removed from its packing with accessories in their container. Table in position with back up, leg sections down, head section and arm rests unattached, pads off, brakes unlocked, & filler plug completely unscrewed. Time: 15 min.		
"Assemble the table and put it in the supine position with 1 arm board."		
1. Lock table in place.	1.	
2. Check that drain plug is in place & base is filled with water. Put in filler plug.	2.	
3. Raise leg sections.	3.	
4. Attach head section.	4.	

Readiness Competency of Nursing Personnel During Deployment Competency Based Exercise		GO	NO GO
5. Attach 1 arm rest.	5.		
6. Put on pads (but do not secure to table).	6.		
"Adjust the table to the . . ."		207	
7. Trendelenburg position.	7.		
8. Reverse Trendelenburg position.	8.		
9. Side tilt position.	9.		
10. Kraske (Jackknife) position.	10.		
11. Lithotomy position (attach only 1 leg holder).	11.		
"What is 1 general safety measure that you would take when moving the patient from the gurney onto the operating table?"			
12. "Lock the brakes on the gurney."	12.		
TASK 208 <i>Set Up an Electrosurgical Unit (66E, 91D)</i>			
Conditions: 1 electrosurgical unit with non-disposable patient grounding pad, monopolar handpiece, & monopolar foot pedal; 1 full-body mannequin. Time: 4 min.			
If the Valleylab electrosurgical unit is used, check the 'GO' column. If the Bircher electrosurgical unit is used, check the 'NOGO' column.		208	
		0	
"Set up this electrosurgical unit to be used in the monopolar mode."			
1. Connect patient grounding pad, monopolar handpiece, & monopolar foot pedal.	1.		
"Show me how to adjust the coagulation & cutting settings."			
2. Demonstrate adjustment of both settings.	2.		
"Name 2 characteristics of the patient site where you would place the grounding plate."			

Readiness Competency of Nursing Personnel During Deployment Competency Based Exercise			GO	NO GO
Patient site . . .				
is close to the surgical site.	3.			
is well vascularized.				
has no excessive hair.	4.			
has no bony prominences.				
"Apply the non-disposable grounding plate to the patient."				
5. Apply plate after spreading small amount of gel evenly; lift or roll patient to apply plate--do not push plate under patient.	5.			
TASK 209- 210				
<i>Set Up & Operate an Intermittent Suction-Aspirator System (66E, 91D)</i>				
Conditions: 1 intermittent suction-aspirator system; all connecting tubing, filter, collection jars, & 1 large basin on table. Time: 5 min.				
"Set up this suction-aspirator for use during a surgical procedure."				
1. Attach tubing to overflow valve & insert into holder.	1.			
2. Attach filter.	2.			
3. Attach tubing to collection jars.	3.			
4. Attach sterile suction tubing.	4.			
"Operate the suction-aspirator system on continuous suction/high vacuum mode at 100 mm Hg."				
5. Turn master power switch on & select vacuum/recharge power mode.	5.			
6. Select continuous suction & high vacuum settings.	6.			
7. Adjust vacuum regulator setting @ 100 mm Hg & suction water out of the basin.	7.			
TASK 211- 212				
<i>Set Up & Operate a Pulse Lavage Irrigator (66E, 91D)</i>				
Conditions: 1 pulse lavage irrigator, 1 liter IV bag of any type fluid, 1 irrigation tubing hand piece set, 1 multiple orifice tip, 1 large basin, & 1 assembled suction-aspirator system. Time: 8 min.				

**Readiness Competency of Nursing Personnel During Deployment
Competency Based Exercise**

"Set up this pulse lavage irrigator for use during a surgical procedure."

1. Insert tubing in pump roller & turn unit on.
2. Insert tubing through pinch clamp & retainer clips.
3. Attach suction line to suction apparatus.
4. Attach irrigation control filter.
5. Attach handpiece.

"Suction water out of this basin by activating only the suction."

6. Place finger over suction control hole to suction fluid from basin.

"Now suction and irrigate at the same time."

7. Cover both suction & irrigation control holes to suction & irrigate at the same time.

"As a circulator, what do you monitor when the pulse lavage irrigator is being used during a case?"

8. "I monitor the suction and the irrigation fluid levels."

TASK 213 *Set Up a Blood Recovery and Delivery System (66F, 91D)*

Conditions: 1 Blood Recovery and Delivery System set up with the following deficiencies: Bottom 2 corners of sterile collection liner not secured; autotransfusion reservoir door closed but handle not locked, top clamp rotated up, & bottom clamp rotated down; centrifuge bowl seated loosely in well & screws not tightened; feed tube support arms not locked in place; tubing lying loosely by open pump head; tubing not threaded through air detector; red & blue tubes reversed in position; red & blue tubes not connected to any bag; normal saline bag connected to anticoagulant tubing, but bag not labeled as having an anticoagulant added. **Time:** 15 min.

GO

NO
GO

211

1.

2.

3.

4.

5.

212

6.

7.

8.

**Readiness Competency of Nursing Personnel During Deployment
Competency Based Exercise**

"Here is a Blood Recovery and Delivery System that has been set up with several deficiencies. Each of the deficiencies would prevent the safe and effective use of the equipment. Identify and correct the deficiencies."

GO

NO
GO

213

1. Identify that the sterile collection liner is not properly secured in the autotransfusion reservoir. Secure collection liner at all 4 corners of the reservoir. 1.
2. Identify that the autotransfusion reservoir door is not completely closed. Secure reservoir door closed with the handle locked forward, the top clamp rotated down, & the bottom clamp rotated up. 2.
3. Identify that the centrifuge bowl is not securely seated. Install centrifuge bowl. (A click will indicate that the bowl is seated in the well.) Hold chuck in place with chuck tool and rotate bowl left & right to check free movement. Tighten 3 chuck screws. (Screws are tight when the chuck tool gives a distinct click.) 3.
4. Identify that the feed tube support arms are not locked in place. Lock left & right feed tube support arms in place with hook. Rotate cam lock to the 6 o'clock position. Close centrifuge cover. 4.
5. Identify that tubing is not properly threaded through the pump head. Open pump head & install tubing between the guides located on the left and right of the pump. Close the pump head. 5.
6. Identify that tubing is not properly threaded through the air detector. Firmly seat the tubing in the air detector & under the tubing guide. 6.
7. Identify that the red & blue tubes are reversed in position. Install red & blue feed tubes in appropriate color-coded clamps. Close feed tube clamps. 7.
8. Identify that the red & blue tubes are not connected to any bag. Connect red tube to the reservoir drain. Connect blue tube to the reinfusion bag connection. 8.

Readiness Competency of Nursing Personnel During Deployment Competency Based Exercise		GO	NO GO
9. Identify that the normal saline bag is not marked as having an anticoagulant added. Verbalize that the anticoagulant should be added & the bag should be labeled.	9.		
10. Verbalize that 30,000 units of Heparin normally is added for each 1 liter of normal saline in the bag.	10.		
Thank You!			

APPENDIX D

DESCRIPTION OF SKILL STATIONS

Following is a list of equipment and supplies required for testing clinical skills in the competency based exercise.

Task 1.01: Operate a Cardiac Monitor Recorder

Task 1.02: Obtain a 12-Lead EKG

Field table (1).

Hewlett-Packard Cardiac Monitor-Recorder, NSN 6515-01-291-1198, or

Hewlett-Packard Defibrillator/Monitor-Recorder System, NSN 6515-01-291-1199 (1).

Recorder paper (1 roll).

5-lead electrode set (1).

Metal plate limb electrodes (4) with holding straps (4).

Suction cup electrode (1).

Electrode gel (1 tube).

Alcohol pads (1 box).

Hospital bed (1).

Mannequin that has 4 extremities (1).

Task 1.03: Operate a Field Portable Oropharyngeal Suction Apparatus

Field table (1).

Field Oropharyngeal Suction Apparatus, Model 308M, by Impact,

NSN 6515-01-304-6497 (1).

Suction tubing (1).

Suction catheter (1).

Small container of tap water (1).

Gloves (1 pair).

Task 1.04: Operate a Surgical Suction Apparatus

Gomco Model 6053 Surgical Suction Apparatus, NSN 6515-01-259-4307

(2-bottle water-seal system with 1 spare drainage bottle) (1).

Connecting tubing for suction apparatus (1 set).

Rubber-padded large clamps (2).

Sterile water (1 bottle).

Task 1.05: Operate a Field Oxygen Delivery System

Task 1.06: Operate a Ventilator

Field table (1).
"H" oxygen cylinder in secured position (1).
Uni-Vent Model 750 Ventilator by Impact, NSN 6530-01-327-0686.
Required ventilator circuits (1 set).
Oxygen connecting tubing (1).
50 psi pressure regulator for ventilator (1).
Test lung (1).
Cylinder regulator with flowmeter for oxygen delivery system (1).
Christmas tree adapter (1).
Wrench (1).
Nasal cannula with oxygen connecting tubing (1).

Task 1.07: Operate a Mobile Ultrasonic Cleaner

Table (1).
Mobile ultrasonic cleaner, NSN 6530-01-254-4135 (1).
Sonic cleaner (1 bottle).
Minor tray with instruments (1).
Disposable gloves (1 pair).

Task 1.08: Operate a Field Sterilizer

Field sterilizer that is not in standing position, NSN 6530-00-926-2151 (1).
Field sterilizer that has been set up (1).
Minor tray ready for sterilization (1).

Task 1.09: Operate a Field Operating Table

Field operating table, NSN 6530-00-142-9239 (1).
Accessory box containing the table's accessories (1).

Task 1.10: Operate an Electrosurgical Apparatus

Valleylab electrosurgical apparatus, NSN 6515-01-309-6647, or
Birtcher electrosurgical apparatus, NSN 6515-01-269-6056 (1).
Non-disposable patient return electrode (1).
Disposable patient return electrode (1).
Monopolar handpiece (1).
Monopolar foot pedal (1).
Electrode gel (1 tube).
Full-body mannequin (1).
Field operating table, NSN 6530-00-142-9239 (1).

Task 1.11: Operate an Intermittent Suction-Aspirator System

Task 1.12: Operate a Pulsed Irrigation and Suction System

Table (2).

Intermittent suction-aspirator system, NSN 6515-01-267-2726 or

NSN 6515-01-267-2727 (1).

Connecting tubing (1 set).

Filter (1).

Overflow valve (1).

Collection jars (1 set).

Stryker OrthoLav Pulsed Irrigation and Suction System, NSN 6530-01-237-6088 (1).

1-liter IV bag of any solution (1).

IV connecting tubing (1 set).

Stryker disposable large handpiece and tubing set, NSN 6530-01-184-1239 (1).

Disposable straight multiple orifice tip, NSN 6530-01-184-1240 (1).

Large basin with stand (1).

Task 1.13: Set Up a Blood Recovery and Delivery System

Haemonetics Cell Saver 4 Autologous Blood Recovery System,

NSN 6516-01-240-6883 (1).

Haemonetics Basic Collection Pack, NSN 6515-01-185-2406 (1).

Haemonetics Basic High Speed Cell Saver Pack, NSN 6515-01-169-7785 (1).

Sterile Normal Saline solution, 1 or 3 liter bags (1-2 bags for saline wash lines).

Sterile Normal Saline solution, 1 liter bag (1 bag for heparinized saline solution).

Assembled intermittent suction-aspirator system, NSN 6515-01-267-2726 &

NSN 6515-01-267-2727 (1).

Task 2.01: Measure CVP Using a Water Manometer System

Hospital bed (1).

Mannequin with upper extremities (1).

IV pole (1).

1-liter IV bag of any solution (1).

IV connecting tubing (1).

Central Venous Pressure Monitor, Pharmaseal Cat. No. 4338A, unassembled (1).

Small basin (e.g., 1 emesis basin).

Task 2.02: Measure a Patient's Oral Temperature

Task 2.03: Measure a Patient's Blood Pressure

Field table (1) and chairs (2).

1 oral and 1 rectal thermometer, each in a container labeled "Clean Thermometers."

Container labeled "Dirty Thermometers" (1).

Extra thermometer on table for the student to read (1).

Sterile alcohol pads (1 box).

Professional aneroid sphygmomanometer (1).

Professional dual training stethoscope (1).

Task 2.04: Prepare an IV Additive

Task 2.05: Calculate an Oral Medication Dosage

Task 2.06: Calculate the Flow Rate for an IV Infusion

Field table (1) and chair (1).

Piggy-back IV bag (1).

5 cc syringe and needle in sterile wrapper (1).

Medication vial (1).

Blank label (1).

Sterile alcohol pads (1 box).

Written calculation exercises (3).

Pencil (1).

Task 2.07: Prepare Sterile Items for Storage

Table (1).

Wrapped tray labeled as "minor tray" and hermetically sealed (1).

Task 2.08: Perform High Level Disinfection

Table (1).

Soak pan with cover (1).

Disinfection solution (1 bottle).

Heat sensitive item (1).

Sterile towels (1 package).

Sterile gloves (1 pair).

Sterile distilled water (1 bottle).

Task 3.01: Triage Casualties

Chairs (2).

Written triage scenario with descriptions of the first 4 casualties to be triaged.

Picture of the hospital layout.

Task 3.02: Intubate a Patient

Hospital bed (1).
Intubation mannequin (1).
Laryngoscope (1) with 1 straight and 1 curved blade and 1 stylet.
6, 7 and 8 mm ET tube (1 of each).
10 cc syringe in sterile wrapper (1).
Intubation lubricant (1 can).
J tube (1).
Adhesive tape, 1/2" (1 roll).
Stethoscope (1).
Bag-valve mask (1).

Task 3.03: Perform a Needle Chest Decompression

Hospital bed (1).
Mannequin that has chest landmarks visible (1).
14 and 18 gauge angiocaths or needles in sterile wrappers (1 of each).
20 cc syringe in sterile wrapper (1).
Alcohol pads (1 box).
Adhesive tape, 1/2" (1 roll).
Condom or sterile glove (1).

Task 3.04: Treat a Hemorrhaging Patient

Hospital bed (1).
Mannequin with wound marked on lower forearm, just below elbow joint (1).
Dressing, first aid, field, individual troop, camouflaged, NSN 6510-00-159-4883 (2).
Bandage, muslin, compressed, camouflaged, NSN 6510-00-201-1755 (2).
Tongue blades (3).

Task 3.05: Administer Blood to a Patient

Hospital bed (1).
IV pole (1).
Blood pack filled with red liquid and labeled with patient information (1).
1 liter of IV normal saline (1).
1 liter of any IV solution except normal saline (1).
1 large basin in which to set the blood pack and IV bag between use (1).
Blood transfusion recipient set (Y set) (1).
SF 518 completed with patient information (1).

Task 3.06: Set Up Buck's Unilateral Leg Traction

Hospital bed (1).
Mannequin with lower extremities (1).
IV pole for hospital bed.
Soft padding (1 roll).
36" x 2" strip of moleskin with adhesive on one side.
4" elastic bandage (1).
36" piece of traction cord (1).
3" x 3" x 3/4" board (1).
18" strip of stockinette (1).
Adhesive tape (1 roll).

Task 3.07: Manage Peritoneal Dialysis

Hospital bed (1).
Mannequin (1).
IV pole (1).
1- or 2-liter IV bag of any solution with the label "Peritoneal Dialysate" on the bag (1).
IV connecting tubing (1 set).
Simulation of a peritoneal catheter (e.g., 1 empty IV bag tucked under trousers of mannequin with opening of IV bag coming out of trousers).
Sterile gloves (1 pair).
Mask (1).
Sterile gown (1).

APPENDIX E

READINESS TRAINING PROGRAM WRITTEN EXERCISE

DATE _____

ID _ _ _ _ _

There is one best answer for each of the following questions. Circle the number next to the best answer. Please answer all of the questions.

CG1 The Combat Support Hospital needs perimeter protection. Which of the following statements regarding the use of medics for guard duty **IS** correct?

1. Medics may pull guard duty and retain their protection under the Geneva Conventions as long as they abide by specific rules.
2. Medics may not pull guard duty because this act would prohibit them from being classified as medical personnel who are exclusively engaged in medical duties.
3. Medics may pull guard duty, but they must not carry any weapons because this violates the Geneva Conventions.
4. Medics may not pull guard duty because the Geneva Conventions considers them essential personnel in the field hospital.

CG2 When wounded soldiers are admitted to a hospital in the field, all small arms and ammunition in their possession should be

1. taken from the soldier and returned to the soldier's unit.
2. kept in the nearest storage room adjacent to the wards and returned to the soldier when he or she is discharged or transferred.
3. taken from the soldier and handed to authorities outside the medical unit.
4. kept at the soldier's bedside and sent with the soldier when he or she is discharged or transferred.

CG3 Which of the following statements regarding the treatment of enemy wounded and sick **IS** correct?

1. In mass casualty situations, the commander may decide to delay the treatment of enemy wounded and sick until treatment has been provided to all U.S. soldiers who are triaged as "urgent" casualties.
2. Enemy soldiers who are wounded and then captured are given "retained person" status and therefore should be provided with medical treatment equal to that given to U.S. soldiers.
3. Medical treatment can be denied to enemy wounded and sick who are found abandoned without medical supplies and personnel to assist in their care.
4. The only reasons which can justify priority in the order of treatment for the wounded and sick, whether they are friend or foe, are reasons of medical urgency.

CG4 Which of the following statements regarding the evacuation of enemy wounded and sick **IS** correct?

1. Enemy wounded and sick are evacuated through normal medical channels, but are physically segregated from U.S. and allied patients.
2. Enemy wounded and sick are guarded by medical personnel from the originating medical facility during the evacuation flight.
3. Enemy wounded and sick are evacuated from the combat zone (CZ) as soon after their capture as an evacuation flight can be arranged for them, regardless of their medical condition.
4. When a large number of enemy wounded and sick result from an operation, they may be evacuated through special medical channels with enemy medical personnel designated to care for them during the evacuation flight.

CG5 Which of the following statements regarding medical supplies and equipment that are captured from the enemy **IS** correct?

1. Captured medical supplies and equipment should first be used to treat U.S. soldiers who are wounded and sick.
2. After the needs of U.S. soldiers have been fully met, the captured medical supplies and equipment may be used to treat enemy wounded and sick.
3. If any of the captured medical supplies and equipment are unfit for use or not needed for U.S. soldiers or for enemy wounded and sick, they should be destroyed.
4. Representative samples of all captured medical supplies and equipment must be preserved and reported according to Army regulations.

CG6 Medical assets lose their protected status under the Geneva Conventions by committing acts "harmful to the enemy." Such acts include all of the following **EXCEPT**

1. use of a hospital as a shelter for able-bodied combatants.
2. use of smoke and obscurants during medical evacuation operations.
3. use of a hospital as a military observation post.
4. deliberate siting of a medical unit in a position where it would impede an enemy attack.

CG7 The hospital is under attack. Without causing the loss of the Geneva Conventions' protections that are provided to medical personnel and their patients, the senior officer on site may take all of the following actions **EXCEPT** that of

1. ordering personnel to dig in and take cover.
2. arming the medical unit with booby traps and mines.
3. notifying the base cluster commander of the attack.
4. protecting the wounded and sick with rifles or pistols.

CG8 The Geneva Conventions provide special protections and obligations for medical personnel. Which of the following statements is **NOT** correct regarding medical personnel who have been exclusively engaged in medical duties and fall into the hands of the enemy?

1. They may continue to exercise their medical functions for the benefit of prisoners of war.
2. They are subject to the internal discipline of the camp in which they are retained.
3. They are authorized to visit prisoners of war situated in working detachments or in hospitals outside the camp.
4. They may be forced to carry out work other than that concerned with their medical duties.

ES1 Which of the following statements regarding theater evacuation policy is **NOT** correct?

1. Theater evacuation policy is established by the theater commander, with the advice of senior medical officers from representative medical units within the theater.
2. The theater evacuation policy establishes, in number of days, the maximum period of noneffectiveness that patients may be held within the theater for treatment.
3. The time period established in the theater evacuation policy starts on the date the patient is admitted to the first hospital in the combat zone (CZ) or the communications zone (COMMZ).
4. A reduction in the evacuation policy increases the number of patients requiring evacuation out-of-theater, and it increases the requirement for evacuation assets.

ES2 Subordinate commands may establish intratheater patient evacuation policies within the limits of the theater patient evacuation policy and subject to approval by the theater commander. Which of the following statements about intratheater evacuation policy is **NOT** correct?

1. Adjustments in the intratheater evacuation policy enable hospitals to accommodate surges of patients.
2. Any patient who cannot be expected to return to duty within the stated policy is evacuated as soon as his condition and transportation resources permit.
3. Intratheater evacuation policies must be flexible and changed as dictated by the tactical situation.
4. Intratheater evacuation policies should be the same in all intratheater hospitals.

ES3 Evacuation of sick, wounded, and injured soldiers is performed by a higher echelon of medical care going forward and evacuating from a lower level. Routinely bypassing levels of care

1. causes overevacuation of less critically injured soldiers.
2. keeps evacuation assets in their supporting position for longer periods of time.
3. results in a more timely return to duty of sick and injured soldiers.
4. ensures the most effective use of medical resources.

ES4 The Patient Evacuation Tag (DD Form 602) is used to record

1. identifying data on baggage accompanying a patient on an evacuation flight.
2. evacuation information about soldiers killed in action.
3. a patient's prescribed medical care requirements and treatments given during evacuation.
4. information about medical evacuation patients and their attendants.

ES5 There are certain items of medical property (e.g., blankets, splints, litters) which should be kept with a patient being evacuated from one medical treatment facility (MTF) to another. To prevent rapid and unnecessary depletion of supplies and equipment from the transferring facility, the

1. mobile aeromedical staging facility (MASF) sends replacement items directly to the transferring Army facility.
2. receiving Army facility turns over to the transferring Army facility the same number of the same items of medical property.
3. medical logistics battalion processes a record of the patient evacuation tags to send replacement items to the transferring facility.
4. receiving Army facility sends a property manifest slip to the transferring Army facility to authorize replacement items.

ES6 A decision to request medical evacuation in wartime places certain responsibilities on the requesting unit in the overall evacuation effort. To prepare for and assist during evacuation, the unit must take all of the following actions **EXCEPT**

1. ensuring that the tactical situation permits successful evacuation.
2. ensuring that patients are ready for pickup when the evacuation request is submitted.
3. moving patients to the safest aircraft approach and departure point or ambulance exchange point (AXP) if they are to be evacuated by air.
4. ensuring that the receiving unit has sufficient beds to accommodate the patients to be evacuated.

ES7 Medical regulating is a system for coordinating and controlling the movement of patients through the various echelons of care. Medical regulating involves all of the following responsibilities **EXCEPT**

1. ensuring that patients have supplies needed for evacuation.
2. locating available beds.
3. coordinating the transportation means for movement.
4. identifying the patients awaiting evacuation.

ES8 On morning rounds, the Chief Nurse discusses a patient's status with the surgeon to determine readiness for evacuation. The nurse knows that the (a) _____ accomplishes the medical regulating function at the hospital level while the (b) _____ receives and consolidates evacuation requests at the command and control headquarters.

1. (a) patient administrator; (b) evacuation administrator
2. (a) evacuation administrator; (b) patient administrator
3. (a) patient administrator; (b) medical regulating officer
4. (a) medical administrator; (b) patient regulating officer

EP1 Patients with a pneumothorax (any degree) who are air evacuated are at increased risk at high altitude because of gas expansion. Such a patient must have a chest tube with a _____ valve in place before a flight.

1. Luer
2. Heimlich
3. Cooley
4. Malecot

EP2 Which of the following statements about air evacuation of orthopedic patients with fractures **IS** correct?

1. A new fracture does not need to be splinted or immobilized before a flight.
2. A newly applied cast does not need to be observed for any period of time before a flight.
3. A cast should be bivalved, if possible, before a flight.
4. A pneumatic splint should be used instead of a cast during a flight whenever possible.

EP3 When considering air evacuation of orthopedic traction patients, you remember that free hanging weights

1. are to be kept in place to maintain traction ordered by physicians.
2. are absolutely contraindicated and should be replaced with Collins traction.
3. are not necessary due to the specially designed pneumatic air splints.
4. are best used if they are kept from being free hanging.

EP4 CPT Lopez gives DEPMEDS nursing personnel inservice education on clinical parameters of evacuation requirements. The only absolute indication for altitude restriction is _____ or _____.

1. hemoglobin of 10 percent or hematocrit of 30
2. compartment syndrome or fat embolism
3. decompression sickness or air embolism
4. climacteric syndrome or thromboembolism

EP5 Which of the following patient conditions **IS** an absolute contraindication to aeromedical evacuation?

1. Communicable infectious disease patients who are in the infectious phase of their disease.
2. Patients with acute anemia or severe chronic anemia with hemoglobin of less than 7 Gm or hematocrit less than 21 percent.
3. Patients who have suffered a myocardial infarction within the last 10 days and who have not been free of complications for 5 days.
4. There are no patient conditions which are absolute contraindications to aeromedical evacuation.

EP6 During aeromedical evacuation, the originating medical treatment facility should provide the patient with a _____ intratheater or a _____ intertheater supply of medications ordered on DD Form 602.

1. 3-day intratheater or a 5-day intertheater
2. 4-day intratheater or a 5-day intertheater
3. 5-day intratheater or a 6-day intertheater
4. 5-day intratheater or a 10-day intertheater

EP7 MAJ Clearwater briefs the DEPMEDS nursing staff on the medical evacuation precedence category assigned to sick and wounded patients who require prompt medical care and should be evacuated within 4 hours or their medical condition could deteriorate to such a degree that they will become a higher precedence. These patients are categorized as

1. routine.
2. priority.
3. urgent.
4. immediate.

EP8 MAJ Clearwater continues the medical evacuation precedence briefing. She notes that the severely burned trauma patient is categorized as

1. routine.
2. priority.
3. urgent.
4. immediate.

APPENDIX F

GLOSSARY

The following terms are defined as used in this technical report. Terms are presented in the following categories: General, Readiness Training Program Components, and Training.

General

Active component (AC). "That portion of the US Army in which organizations are comprised of personnel on full-time duty in active military service of the United States" (FM 25-101, p. Glossary-1).

Area of operations (AO). "A geographical area assigned to an army commander by a higher commander. An AO has lateral and rear boundaries, which usually define it within a larger joint geographical area" (FM 100-16, p. Glossary-1).

Combat lifesaver. An individual soldier trained to provide enhanced first-aid care for injuries prior to treatment by the combat medic. "These individuals are nonmedical unit members selected by their commander for additional training to be proficient in a variety of first-aid procedures. A minimum of one individual per squad, crew, team, or equivalent-sized unit is trained. All combat units and some combat support (CS) and combat service support (CSS) units have combat lifesavers. The primary duty of these individuals does not change. The additional duties of combat lifesavers are performed when the tactical situation permits" (FM 8-10-14, p. 1-3).

Combat medic. "The first individual in the CHS chain who makes medically substantiated decisions based on medical military occupational specialty (MOS)-specific training. The combat medic is supported by first-aid providers in the form of self-aid and buddy aid and the combat lifesaver" (FM 8-10-14, pp. 1-1 to 1-3).

Combat service support (CSS). "The focus of logistics at the tactical level of war; the synchronization of essential functions, activities, and tasks necessary to sustain soldiers and their weapons systems in an area of operations; includes but is not limited to that support rendered by service support troops to arm, fuel, fix, move, and sustain soldiers and their equipment" (FM 100-16, p. Glossary-6).

Combat support (CS). "Fire support and tactical assistance provided to combat elements. May include artillery, helicopter, engineer, MP, signal, and electronic warfare" (FM 100-16, p. Glossary-5).

Deployable Medical Systems (DEPMEDS). The hospitalization standardized shelter systems, environmental control units, power generators, and DMSB-approved MES and MMS designed for facilities capable of being located in a desired or required area of operations during a

contingency, war, or national emergency. This Tri-Service standardization effort was due to a DOD directive to modernize the theater hospital system. Note that the BAS and medical company (clearing station) are not DEPMEDS treatment facilities (TC 8-13).

Field environment. A setting in which patient care activities are performed outside of a fixed healthcare facility. Examples of a field environment are the battlefield, aid stations, and DEPMEDS treatment facilities.

Fixed healthcare facility. An immobile facility established for the purpose of providing in-patient and/or out-patient medical treatment.

Medical treatment facility (MTF). "Any facility established for the purpose of providing medical treatment. This includes aid stations, clearing stations, dispensaries, clinics, and hospitals " (FM 8-10-3, p. Glossary-19).

Nursing personnel. As used in this manual, nursing personnel refers to the following categories of personnel in the active and reserve components of the AMEDD: (a) personnel who function in the field as medical-surgical nurses - 66H; (b) operating room nurses - 66E; (b) nurse anesthetists - 66F; (d) practical nurses - 91C; (e) medical specialists - 91B; and (f) operating room specialists - 91D.

Readiness. The initial abilities of nursing personnel to perform their patient care role when placed in a field environment. This includes the ability of nursing personnel to deploy and employ without unacceptable delays. Readiness is one component of military capability (JCS Pub 1-02).

Readiness competency. The abilities of nursing personnel to perform tasks critical to their patient care role in a deployed or field status. Readiness competency is measured on a continuum which ranges from the novice to the expert level.

Reserve components (RC). "Individuals and units assigned to the Army National Guard or the US Army Reserve who are not in active service but are subject to call to active duty" (FM 25-101, p. Glossary-8).

Self-aid and buddy aid. Aid provided by a soldier who "is trained to be proficient in a variety of specific first-aid procedures with particular emphasis on lifesaving tasks. This training enables the soldier, or a buddy, to apply immediate care to alleviate a life-threatening situation" (FM 8-10-14, p. 1-3).

Theater of operations (TO). "That portion of an area of war necessary for military operations and for the administration of such operations" (FM 8-10-14, p. 1-1).

Readiness Training Program Components

Following are definitions for terms used to describe the components of the Readiness Training Program (RTP). These definitions are based on selected Army publications and consultations with expert panel members on the two readiness studies.

Battle focus. "The process of deriving peacetime training requirements from wartime missions" (FM 25-101, p. Glossary-1).

Battle-Focused Functions (BFFs). Actions performed by nursing personnel in support of patient care or unit management in a field environment. Some BFFs require nursing personnel to interface with the command and control, medical evacuation, or medical supply systems when providing patient care in a field environment. Other BFFs require nursing personnel to apply infection control or sustainment principles to patient care in a field environment. Following are five categories of BFFs that are based on knowledge of these systems and principles:

Command and Control Functions. Actions which require nursing personnel to interface with the command and control system when providing patient care in a field environment. The command and control system is defined as a system designed for "the exercise of command that is the process through which the activities of military forces are directed, coordinated, and controlled to accomplish the mission. This process encompasses the personnel, equipment, communications, facilities, and procedures necessary to gather and analyze information, to plan for what is to be done, and to supervise the execution of operations" (FM 8-10-3, p. Glossary-8).

Medical Evacuation Functions. Actions which require nursing personnel to interface with the medical evacuation system when providing patient care in a field environment. The medical evacuation system is defined as a modern, complex transportation system designed to provide "the timely, efficient movement and en route care by medical personnel of the wounded, injured, or ill persons from the battlefield and other locations to MTFs. . . . Evacuation begins when medical personnel receive the injured or ill soldier and continues as far rearward as the patient's medical condition warrants or the military situation requires" (FM 8-10-6, p. 1-2).

Medical Supply Functions. Actions which require nursing personnel to interface with the medical supply system when providing patient care in a field environment. The medical supply system is defined as the aspect of the combat health logistics system dealing with the procurement, distribution, and storage of medical matériel, including medical-peculiar repair parts (Class VIII supplies) (FM 8-10).

Infection Control Functions. Actions performed to prevent and control infections associated with (a) battle injuries and (b) disease and nonbattle injuries (DNBI) in a field environment. These actions require nursing personnel to apply infection control principles to the practice of

nursing in a field environment for the purpose of minimizing infection and its associated disability, morbidity, and mortality.

Sustainment Functions. Actions performed in support of patients, oneself, or other staff to ensure ongoing patient care services in a field environment, to include patient care in aid stations, medical companies, dispensaries, clinics, and hospitals in all levels of care. These actions require nursing personnel to apply sustainment principles to their work in a field environment.

Clinical Skills. Tasks performed when carrying out patient care activities. To perform a clinical skill, nursing personnel must understand the principles underlying skill performance and must have had experience in practical application of the principles to patient care situations.

Basic Skills. Skills performed in the field without automated equipment or specialized support services commonly available in fixed MTFs.

Equipment Skills. Skills performed using field medical equipment, which generally are operated differently from equipment used to perform the same or similar skills in fixed facilities.

Expanded Role Skills. Skills performed by nursing personnel in aspects of their role that are expanded from the fixed facility to the field environment.

Competence. An intellectual and/or motor capability derived from a specified role and setting and stated in terms of performance of tasks that represent a domain of behavior.

Skill. A complex action that can be carried out successfully as a result of previous instruction and practice; a developed aptitude or ability.

Training

The following training terminology is based on TRADOC Reg 350-70, *Training Development Management, Processes, and Products*, 24 Sep 95. Definitions for the following training-related terms have been taken verbatim from the Glossary of TRADOC Reg 350-70.

After-action review (AAR). A professional discussion of an event, focused on performance standards, that enables soldiers to discover for themselves what happened, why it happened, and how to sustain strengths and improve on weaknesses. It is a tool leaders, trainers, and units can use to get maximum benefit from every mission or task.

Army Training and Evaluation Program (ARTEP). The cornerstone of unit training. It is the umbrella program to be used by the trainer and training manager in the training evaluation of units. The ARTEP is a complete program enabling commanders to evaluate and develop

collective training based on unit weaknesses, then train the unit to overcome those weaknesses and reevaluate. Success on the battlefield depends on the coordinated performance of collective and individual skills that are taught through the ARTEP MTP.

Doctrinal literature. The fundamental principles of doctrine, together with the tactics, techniques, and procedures to implement the doctrinal principles and win on the battlefield. Army doctrinal literature is published in FMs.

Doctrine. Fundamental principles by which the military forces or elements thereof guide their actions in support of national objectives. It is authoritative but requires judgment in application.

Evaluation. Measurement of the demonstrated ability of soldiers or units to perform a task, and supporting skill and knowledge, or learning objective against the established standard.

Field Manual (FM). A DA publication that contains doctrine that prescribes how the Army and its organizations function on the battlefield in terms of missions, organizations, personnel, and equipment. The level of detail should facilitate an understanding of "what" and "how" for commanders and staffs to execute their missions and tasks. The FM may also be used to publish selected alliance doctrinal publications that are not readily integrated into other doctrinal literature.

Graphic Training Aid (GTA). A Graphic Training Aid (GTA) provides a means for trainers to conduct and sustain task-based training in lieu of using extensive printed material or an expensive piece of equipment. The uses of GTAs range from quick reference memory aids to simulation games for a battalion.

Learning objective (LO). A precise three-part statement describing what the student is to be capable of accomplishing in terms of the expected student performance under specific conditions to accepted standards. Learning objectives clearly and concisely describe student performance required to demonstrate competency in the material being taught. LOs focus the training development on what needs to be trained and focuses student learning on what needs to be learned.

Enabling learning objective (ELO). A learning objective that supports the terminal learning objective. It must be learned or accomplished to learn or accomplish the terminal learning objective. It consists of an action, condition, and standard. Enabling objectives are identified when designing the lesson. A terminal learning objective does not have to have enabling objectives, but it may have more than one.

Terminal learning objective (TLO). The main objective of a lesson. It is the performance required of the student to demonstrate competency in the material being taught. A TLO describes exactly what the student must be capable of performing under the stated conditions to the prescribed standard on lesson completion. There is only one TLO per lesson regardless of presentation method or media and it has only one verb. The terminal learning objective may

cover one critical task, part of a critical task (i.e., a skill or knowledge), or more than one critical task. The TLO may be identical to the critical task being taught or there may be a disparity between them. Where there is a disparity, it is the TLO standard that the student must achieve to demonstrate competency for course completion.

Mastery.

Training - The performance of the training objectives within the prescribed conditions and to the stated standard.

On the job - Successful task performance without supervision or coaching.

Military Qualification Standards (MQS) Manual. MQS manuals list all common, shared, and branch-specific critical tasks. Officers refer to the MQS manuals to determine critical tasks, professional knowledge, and special emphasis areas required to successfully perform their jobs. These manuals also provide reference courses and job aids to assist in task performance and self-development.

Mission. A series of related tasks that comprise the major capabilities and/or requirements imposed on a unit by its parent organization or table(s) of organization and equipment.

Mission essential task list (METL). A compilation of collective mission essential tasks which must be successfully performed if an organization is to accomplish its wartime mission(s).

Mission Training Plan (MTP). A MTP provides comprehensive training and evaluation outlines, and exercise concepts and related training management aids to assist field commanders in the planning and execution of effective unit training. It provides units a clear description of "what" and "how" to train to achieve wartime mission proficiency.

Performance checklist. The breakdown of an objective into elements that must be correctly performed to determine whether each student satisfactorily meets the performance standards described in the learning objective.

Performance-oriented training. Training in which learning is accomplished through performance or the actual doing of the tasks or supporting learning objectives under specific conditions until an established standard is met.

Performance test. An evaluation of the actual performance of the task or learning objective using the conditions under which it will be performed and the absolute standards for acceptable performance.

Posttest. A test administered after the completion of instruction to determine whether a student has mastered the objectives to the established standard.

Practical exercise (PE). The hands-on application of the performance required in enabling or terminal learning objectives. It gives the student the opportunity to acquire and practice skills, knowledge, and the behaviors necessary to perform the training objective successfully.

Pretest. A test administered prior to instruction to determine how much the student knows and to determine if the student needs to take this particular instruction.

Professional development course. A course designed to prepare commissioned officers, warrant officers, or noncommissioned officers to effectively perform the duties required in assignments of progressively greater responsibility.

Proficiency. Ability to perform a specific behavior (task, learning objective) to the established performance standard in order to demonstrate mastery of the behavior.

Self-study. Individual study by which a soldier learns or reinforces previous learning, on his/her own.

Soldier training publication (STP). Publications that contain critical tasks and other training information used to train soldiers and serve to standardize individual training for the whole Army; provide information and guidance in conducting individual training in the unit; and aid the soldier, officer, noncommissioned officer (NCO), and commander in training critical tasks. They consist of Soldier's Manuals, Trainer's Guides, Military Qualification Standards Manuals, and Officer Foundations Standards System manuals.

Soldier's manual (SM). A manual which lists critical task summaries for a specific MOS and skill level (SL); provides conditions, standards, and performance measures for each critical task; and is the base document for MOS-specific individual task training and evaluation.

Study guide. As the name states, a document that guides the student through the process of studying a lesson or series of lessons. The student can use it for recording notes.

Subject matter expert (SME). An individual who has a thorough knowledge of a job (duties and tasks). This knowledge qualifies the individual to assist in the training development process (i.e., consultation, review, analysis, etc.). Normally, a SME will instruct in his area of expertise.

Task. A clearly defined and measurable activity accomplished by individuals and organizations. It is the lowest behavioral level in a job or unit that is performed for its own sake. It must be specific; usually has a definite beginning and ending; may support or be supported by other tasks; has only one action and, therefore, is described using only one verb; generally is performed in a relatively short time (however, there may be no time limit or there may be a specific time limit); and it must be observable and measurable. The task title must contain an action verb and object and may contain a qualifier.

Collective task. Derived from unit missions. Requires group participation for its accomplishment (e.g., operate an M105 Howitzer). It may also be a mission requirement, such as secure a bridgehead, that can be broken down into supporting individual tasks. It describes the exact performance a unit must perform in the field under actual operational conditions.

Critical individual task. An individual task which is critical.

Critical task. A collective or individual task a unit or individual must perform to accomplish their mission and duties and to survive in war or military operations other than war (MOOTW). Critical tasks must be trained.

Individual task. The lowest behavioral level in a job or duty that is performed for its own sake. It should support a collective task; it usually supports another individual task.

Task summary. A listing in the soldiers' training publications of the conditions, standards, and performance measures, references, and proponent for each individual critical task. Information is extracted from the individual critical task analysis.

Task condition. The task condition describes the field conditions under which the task will be performed. The condition expands on the information in the task title by identifying when, where, and why the soldier performs the task and what materials, personnel, and equipment the soldier must have to perform the task.

Standard. A statement which establishes a criteria for how well a task or learning objective must be performed. The standard specifies how well, completely, or accurately a process must be performed or product produced. The task standard reflects task performance requirements on the job. The learning objective standard reflects the standard that must be achieved in the formal learning environment.

Evaluation guide. The section of the task summary in a soldier's manual which lists the pass/fail performance measures for evaluating the soldier's performance on the task.

Performance measures. The actions that can be objectively observed and measured to determine if a task performer has performed the task to the prescribed standard. These measures are derived from the task performance steps during task analysis.

Technical manual (TM). A publication which describes equipment, weapons, or weapons systems with instructions for effective use. It may include sections for instructions covering initial preparation for use and operational maintenance and overhaul.

Training.

Annual training. The minimal period of annual active duty training a member performs to satisfy the annual training requirements associated with a Reserve Component assignment. It may be performed during one consecutive period or in increments of one or more days, depending upon mission requirements.

Collective training. Training, either in institutions or units, that prepares cohesive teams and units to accomplish their missions on the battlefield and in operations other than war.

Individual training. Training which prepares the soldier to perform specified duties or tasks related to assigned duty position or subsequent duty positions and skill level.

Refresher training / Sustainment training. Used to reinforce previous training and/or sustain/regain previously acquired skills and knowledge. The training -

- is related to course-specific training objectives, performed under prescribed conditions, and must meet prescribed performance standards.
- May take place in a course during or outside of Program of Instruction (POI) time.
- Usually takes place in the unit to sustain or retrain a previously required proficiency level; may be trained to prepare an individual for institutional training, i.e., meet prerequisite training requirements.

Unit training. Training (individual, collective, and joint or combined) which takes place outside the Army's institutional base.

Training circular (TC). A publication (paper or computer-based) which provides a means to distribute unit or individual soldier training information that does not fit standard requirements for other established types of training publications. TCs are part of the Armywide Doctrinal and Training Literature Program (ADTLP).

Training management. The process commanders and their staff use to plan training and related resource requirements needed to conduct and evaluate training. It involves all echelons and applies to any unit in the Army regardless of strength, mission, organization, or equipment assigned.

Training method. The procedure or process for attaining a training objective. Examples include lecture, demonstration, discussion, assigned reading, exercise, examination, seminar, and programmed instruction.

Training objective. A statement that describes the desired outcome of a training activity in the unit. It consists of the following three parts: task, condition(s), standard.

Training plan. A detailed description of the actions, milestones, and resources required to implement a training strategy. The detail depends on the plan type and level.

Training program. An assembly or series of courses or other training requirements organized to fulfill a broad overall training goal.

Training resources. Those human, physical, financial, and time resources used to conduct and support training.

Training strategy. The general description of the methods and resources required to implement a training concept. It lays out the who, what, where, when why, how, and cost of the training. The development of a training strategy includes determining the training site and media selected to train each critical task.

Training support. The provision of the materials, personnel, equipment, or facilities when and where needed to implement the training. It includes such functions as the reproduction and distribution of training products and materials, training scheduling, student record maintenance.

Training support package (TSP). A complete, exportable package integrating training products, materials, and/or information necessary to train one or more critical tasks. Its contents will vary depending on the training site and user. A TSP for individual training is a complete, exportable package integrating training products/materials necessary to train one or more critical individual tasks. A TSP for collective training is a package that can be used to train critical collective and supporting critical individual tasks (including leader and battle staff).

APPENDIX G

BIBLIOGRAPHY

Following is a list of references cited in the technical report as well as other key references used in the research.

Academy of Health Sciences, U.S. Army. (n.d.). Executive desk reference: A systematic approach to analysis and training. Fort Sam Houston, TX: Author.

Academy of Health Sciences, U.S. Army. (1983). Student notebook: Orientation to the systems approach to training (S.A.T.) course. Fort Sam Houston, TX: Author.

Academy of Health Sciences, U.S. Army. (1990). Medical information system/AMEDD lessons learned (MISALL) (No. 90-1). Fort Sam Houston, TX: Author.

Academy of Health Sciences, U.S. Army. (1990). Medical information system/AMEDD lessons learned (MISALL) (No. 90-3). Fort Sam Houston, TX: Author.

Academy of Health Sciences, U.S. Army. (1990). Staff and faculty development division: Faculty development course general reference. Fort Sam Houston, TX: Author.

Alspach, G. (1992). Concern and confusion over competence. Critical Care Nurse, 12(4), 9-11.

AR 220-1. (1993). Unit status reporting. Washington, DC: HQDA.

Ashworth, P., & Morrison, P. (1991). Problems of competence-based nurse education. Nurse Education Today, 11, 256-260.

Atkinson, K. P. (1990). The ethnographic imagination: Textual constructions of reality. New York: Routledge.

Bartz, C. (1995). Job-plus training for Army combat medics. Army Medical Department Journal, 1(2), 2-6.

Benner, P. (1982). Issues in competency-based testing. Nursing Outlook, 30, 303-309.

Benner, P., & Wrubel, J. (1982). Skilled clinical knowledge: The value of perceptual awareness. Nurse Educator, 12, 11, 13-17.

Bourque, L. B., & Clark, V. A. (1992). Processing data: The survey example (Sage University Paper series on Quantitative Applications in the Social Sciences, series no. 07-085). Newbury Park, CA: Sage.

Brink, P. J. (1991). Issues of reliability and validity. In J. M. Morse (Ed.), Qualitative nursing research: A contemporary dialogue (Rev. ed., pp. 164-186). Newbury Park, CA: Sage.

Browner, W. S., Black, D., Newman, T. B., & Hulley, S. B. (1988). Estimating sample size and power. In S. B. Hulley & S. R. Cummings (Eds.), Designing clinical research: An epidemiologic approach (pp. 139-150). Baltimore: Williams & Wilkins.

Burns, N., & Grove, S. K. (1993). The practice of nursing research: Conduct, critique, & utilization (2nd ed.). Philadelphia: W. B. Saunders.

Castorr, A. H., Thompson, K. O., Ryan, J. W., Phillips, C. Y., Prescott, P. A., & Soeke, K. L. (1990). The process of rater training for observational instruments: Implications for interrater reliability. Research in Nursing and Health, 13, 311-318.

Chickering, A., & Claxton, C. (1981). What is competence? In R. S. Nickse & L. McClure (Eds.), Competency-based education beyond minimum competency testing (pp. 5-41). New York: Teachers College, Columbia University.

Defense Medical Standardization Board. (1990). DEPMEDS policies/guidelines treatment briefs. Frederick, MD: Author.

Deployable medical systems task list. (1993). Unpublished task list, Defense Medical Standardization Board, Joint Services Nursing Advisory Group, Frederick, MD.

DMSB. (1994). DEPMEDS administrative procedures and clinical and support guidelines (3rd ed. draft). Fort Detrick, MD: Author.

Doyle, K. A. (1992). Nurse corps training importance survey report (Report No. 002). Washington, DC: Bureau of Naval Personnel Navy Occupational Development and Analysis Center. (DTIC No. AD-A255 776)

Ebel, R. L. (1979). Essentials of educational measurement (3rd ed.). Englewood Cliffs, NJ: Prentice-Hall.

Ellis, R. (Ed.) (1988). Professional competence and quality assurance in the caring professions. New York: Croom Helm.

Farr, M. J. (1987). The long-term retention of knowledge and skills: A cognitive and instructional perspective. New York: Springer-Verlag.

Feeney, J., & Benson-Landau, M. (1987). Competency-based evaluation: Not just for new nurses. Dimensions of Critical Care Nursing, 6(6), 368-372, 375-376.

Forgues, M. (1994). Skills for the skills examiner. Journal of Emergency Medical Services, 19(2), 125-130.

FM 8-10. (1991). Health service support in a theater of operations. Washington, DC: HQDA.

FM 8-10-3, final draft. (1995). Division medical operations center: Tactics, techniques, and procedures. Washington, DC: HQDA.

FM 8-10-6. (1991). Medical evacuation in a theater of operations: Tactics, techniques, and procedures. Washington, DC: HQDA.

FM 8-10-14. (1994). Employment of the combat support hospital: Tactics, techniques, and procedures. Washington, DC: HQDA.

FM 25-100. (1988). Training the force. Washington, DC: HQDA.

FM 25-101. (1990). Battle focused training. Washington, DC: HQDA.

FM 100-16. (1995). Army operational support. Washington, DC: HQDA.

Gardlin, G. R. & Sitterley, T. E. (1972). Degradation of learned skills: A review and annotated bibliography (D180-15081-1, NASA-CR-128611). Seattle: Boeing.

Gentner, D. (1980). The structure of analogical models in science (Technical report 4451). Cambridge: Bolt, Beranek, & Newman.

Giro, E. A. (1993). Assessment of competence in clinical practice--a review of the literature. Nurse Education Today, 13, 83-90.

Glaser, B. (1978). Theoretical sensitivity. Mill Valley, CA: Sociology Press.

Goldberg, S. L., Drillings, M., & Dressel, J. D. (1981). Mastery training: Effects on skill retention (Technical report 513). Alexandria, VA: Army Research Institute for the Behavioral and Social Sciences.

Hagman, J. D. & Rose, A. M. (1983). Retention of military tasks: A review. Human Factors, 25, 199-213.

Hall, E. R., Ford, L. H., Whitten, T. C., & Plyant, L. R. (1983). Knowledge retention among graduates of basic electricity and electronics schools (Technical report 149). Orlando: Training Analysis and Evaluation Group, Department of the Navy.

Hammersley, M., & Atkinson, P. (1989). Ethnography: Principles in practice. New York: Routledge.

Headquarters, U.S. Army Forces Command. (1994). Reserve component training in America's Army (Interim FORSCOM/ARNG Regulation 350-2). Fort McPherson, GA: Author.

Hudak, J. (1993). Nursing mobilization readiness study. Unpublished manuscript.

Hulley, S. B., & Cummings, S. R. (Eds.). (1988). Designing clinical research: An epidemiologic approach. Baltimore: Williams & Wilkins.

Hurlock, R. E., & Montague, W. E. (1982). Skill retention and its implications for Navy Tasks: An analytical review (NPRDC SR 82-21). San Diego, Navy Personnel Research & Development Center.

Hutchins, E. L., Hollan, J. D., & Norman, D. A. (1985). Direct manipulation interfaces (ICS report 8503). LaJolla, CA: University of California.

Inman, L., & Haugen, C. (1991). Six criteria to evaluate skill competency documentation. Dimensions of Critical Care Nursing, 10(4), 238-245.

Jackson, B. (1987). Fieldwork. Chicago: University of Illinois Press.

JCS Pub 1-02. (1989). Department of defense dictionary of military and associated terms. Washington, DC: United States Joint Military Terminology Group.

Johannigman, J. A., & Putnam, A. T. (1994). Clinical evaluation of the Impact Uni-Vent 750. Military Medicine, 159(5), 403-408.

Kieras, D. E. (1981). Knowledge representation in cognitive psychology (Technical report no. 7). San Diego: Personnel and Training Research Programs, Office of Naval Research.

King, S. E. (1979). Assessment of competence: Technical problems and publications. In G. Grant, P. Elbow, T. Ewens, Z. Gamson, W. Kohli, W. Neumann, V. Olesen, & D. Riesman (Eds.), On competence: A critical analysis of competence-based reforms in higher education. San Francisco: Jossey-Bass.

Klemp, G. O., Jr. (1979). Identifying, measuring, and integrating competence. In P. S. Pottinger & J. Goldsmith (Eds.), New directions for experiential learning: No. 3. Defining and measuring competence (pp. 41-52). San Francisco: Jossey-Bass.

Krueger, W. C. F. (1929). The effect of overlearning on retention. Journal of Experimental Psychology, 12, 71-78.

Lincoln, Y. S. & Guba, E. G. (1985). Naturalistic inquiry. Beverly Hills, CA: Sage.

Littell, R. C., Freund, R. J., & Spector, P. C. (1991). SAS system for linear models (3rd ed.). Cary, NC: SAS Institute.

Lynn, M. R. (1986). Determination and quantification of content validity. Nursing Research, 35, 382-385.

McCall, Susan C. (1993). Lessons learned by Army nurses in combat: A historical review. Carlisle, PA: U.S. Army War College.

McGeoch, J. A., & Irion, A. L. (1952). The psychology of human learning (2nd ed). New York: Longmans, Green, & Company.

Misener, T. R., Bell, M. R., Mechanic, H., & Biskey, V. P. (1986). Mobilization readiness of retired Army nurse corps officers (Report No. HR86-002). Fort Sam Houston, TX: Health Care Studies & Clinical Investigation Activity.

Mishler, E. G. (1986). Research interviewing: Context and narrative. Cambridge, MA: Harvard University Press.

Morse, J. M. (1991). Approaches to qualitative-quantitative methodological triangulation. Nursing Research, 40(1), 120-123.

Morse, J. M. (1994). Emerging from the data: The cognitive processes of analysis in qualitative inquiry. In J. M. Morse (Ed.), Critical issues in qualitative research methods (pp. 23-43). Thousand Oaks, CA: Sage.

Naylor, J. C. , & Briggs, G. E. (1961). Long-term retention of learned skills: A review of the literature (ASD TR 61-390). Columbus: Ohio State University, Laboratory of Aviation Psychology.

Nistler, C. J. (1992). The self-identified skills and competencies of first-line nurse managers (Report No. AFIT/CI/CIA-92-042). Wright-Patterson AFB, OH: University of Minnesota, AFIT/CI. (DTIC No. AD-A254 298)

Palmer, G. A. (1991). Army medical department issues from operation desert shield (DTIC No. AD-A236 932). Carlisle, PA: U.S. Army War College.

Patton, M. Q. (1990). Qualitative evaluation and research methods. Newberry Park, CA: Sage.

Popham, W. J. (1981). Modern educational measurement. Englewood Cliffs, NJ: Prentice-Hall.

Portney, L. G., & Watkins, M. P. (1993). Foundations of clinical research: Applications to practice. Norwalk, CN: Appleton & Lange.

Pottinger, P. S. (1979). Competence assessment: Comments on current practices. In P. S. Pottinger & J. Goldsmith (Eds.), New directions for experiential learning: No. 3. Defining and measuring competence (pp. 25-39). San Francisco: Jossey-Bass.

Prophet, W. W. (1976). Long-term retention of flying skills: A review of the literature (HumRRO Final Report 76-35). Alexandria, VA: Human Resources Research Organization.

Rea, R., Fought, S. G., & Selfridge, J. (1991). Trauma nursing core course (instructor) manual: Faculty version (2nd ed.). Chicago: Emergency Nurses Association.

Rossi, P. H. & Freeman, H. E. (1993). Evaluation: A systematic approach (5th ed.). Newbury Park, CA: Sage.

Sandelowski, M. (1986). The problem of rigor in qualitative research. Advances in Nursing Science, 8, 27-37.

Schalock, H. D. (1981). How can competencies be assessed?: Issues in role-based assessment. In R. S. Nickse & L. McClure (Eds.), Competency-based education beyond minimum competency testing (pp. 148-175). New York: Teachers College, Columbia University.

Schendel, J. D., Shields, J., & Katz, M. (1978). Retention of motor skills: Review (Technical paper 313). Alexandria, VA: Army Research Institute for the Behavioral and Social Sciences.

Schendel, J. D., & Hagman, J. D. (1982). On sustaining procedural skills over a prolonged retention interval. Journal of Applied Psychology, 67, 605-610.

Seidel, J. V. (1988). The ethnograph (Version 3.0) [Computer software]. Corvallis, OR: Qualis Research Associates.

Shields, J. L., Goldberg, S. L., & Dressel, J. D. (1979). Retention of basic soldering skills (Research report 1225). Alexandria, VA: Army Research Institute for the Behavioral & Social Sciences.

Smith, E. & Goodman, L. (1984). Understanding instructions: The role of explanatory material. Cognition and Instruction, 1, 359-96.

Statistical Analysis Software (SAS System for Windows), release 6.12. (1996). Cary, NC: SAS Institute.

Stevens, A., & Steinberg, C. (1981). Project steamer: I. Taxonomy for generating explanations of how to operate complex physical devices (NPRDC technical note 81-21). San Diego: Navy Personnel Research and Development Center.

STP 21-I-MQS. (1990). Military qualification standards I: Manual of common tasks. Washington, D.C.: HQDA.

STP 21-II-MQS. (1991). Military qualification standards II: Manual of common tasks for lieutenants and captains. Washington, D.C.: HQDA.

STP 21-III-MQS. (1993). Military qualification standards III: Leader development manual for majors and lieutenant colonels. Washington, D.C.: HQDA.

Sturges, P., Ellis, J., & Wulfeck, W. (1981). Effects of performance-oriented text upon long-term retention of factual material (NPRDC technical report 81-22). San Diego: Navy Personnel Research and Development Center.

TC 8-13. (1990). Deployable medical systems: Tactics, techniques, and procedures. Washington, DC: HQDA.

TC 25-20. (1993). A leader's guide to after-action reviews. Washington, DC: HQDA.

Tourangeau, R., & Sternberg, R. (1982). Understanding and appreciating metaphors. Cognition, 11, 203-244.

TRADOC Reg 350-70. (1995). Training development management, processes, and products. Fort Monroe, VA: HQ, United States Army Training and Doctrine Command.

United States Army Medical Department Center and School. (1992). Medical information system/AMEDD lessons learned (MISALL) (No. 92-1). Fort Sam Houston, TX: Author.

United States General Accounting Office. (1993). Medical readiness training: Limited participation by Army medical personnel (GAO/NSIAD-93-205). Washington, DC: Author.

United States General Accounting Office. (1992). Operation desert storm: Full Army medical capability not achieved (GAO/NSIAD-92-175). Washington, DC: Author.

Waltz, C. F., Strickland, O. L., & Lenz, E. R. (1991). Measurement in nursing research (2nd ed.). Philadelphia: F. A. Davis.

Wholey, J. S., Hatry, H. P., & Newcomer, K. E. (Eds.). (1994). Handbook of practical program evaluation. San Francisco: Jossey-Bass.

Worthen, B. R. & Sanders, J. R. (1987). Educational evaluation. White Plains, NY: Longman.

Whyte, W. F. (1984). Learning from the field. Newbury Park, CA: Sage.

Young, R. M. (1983). Surrogates and mappings: Two kinds of conceptual models for interactive devices. In Mental models (pp. 35-52). Hillsdale, NJ: Erlbaum.

Zadinsky, J. K. (1997). Readiness competency of nursing personnel in the AMEDD (HR 95-002). Fort Sam Houston, TX: Center for Healthcare Education & Studies.

APPENDIX H

DOCUMENT DISTRIBUTION LIST

Defense Technical Information Center, ATTN: DTIC-OCP, 8725 John J. Kingman Road, Suite 0944, Fort Belvoir, VA 22060-6218 (2)

Defense Logistics Information Exchange, US Army Logistics Management College, ATTN: ATSZ-DL, Fort Lee, VA 23801-6043 (1)

Director, Joint Medical Library, ATTN: DASG-AAFJML, Offices of the Surgeons General, Army/Air Force, Rm 670, 5109 Leesburg Pike, Falls Church, VA 22041-3258 (1)

Stimson Library, Academy of Health Sciences, ATTN: MCCS-HSL, Fort Sam Houston, TX 78234-6060 (2)

HQDA (DASG-CN), ATTN: COL Susan McCall, Room 623, Skyline Five, 5111 Leesburg Pike, Falls Church, VA 22041-3258 (1)

Chief, Department of Nursing Science, Academy of Health Sciences, ATTN: COL Lynne Connelly, U. S. Army Medical Department Center & School, Fort Sam Houston, Texas 78234-6140 (1)